A guidebook intended for use by first responders during the initial phase of a **transportation incident involving dangerous goods/hazardous materials**

2016

EMERGENCY RESPONSE GUIDEBOOK

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

Transport Canada

Transports Canada

SCT
SECRETARÍA DE COMUNICACIONES Y TRANSPORTES

SHIPPING DOCUMENTS (PAPERS)

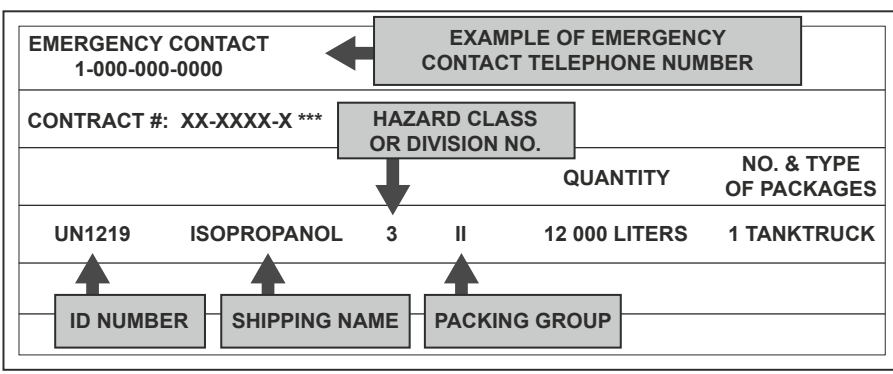
Shipping Documents (Papers) are synonymous and can be found as follows:

- Road – kept in the cab of a motor vehicle
- Rail – kept in possession of a crew member
- Aviation – kept in possession of the aircraft pilot
- Marine – kept in a holder on the bridge of a vessel

Shipping Documents (Papers) provide vital information regarding the hazardous materials/dangerous goods to initiate protective actions*

Information provided:

- 4-digit identification number, UN or NA (go to yellow pages)
- Proper shipping name (go to blue pages)
- Hazard class or division number of material
- Packing group
- Emergency response telephone number
- Information describing the hazards of the material (entered on or attached to shipping document) **



EXAMPLE OF PLACARD AND PANEL WITH ID NUMBER

The 4-digit ID Number may be shown on the diamond-shaped placard or on an adjacent orange panel displayed on the ends and sides of a cargo tank, vehicle or rail car.

A Numbered Placard

OR

A Placard and an Orange Panel

* For the purposes of this guidebook, the terms hazardous materials/dangerous goods are synonymous.

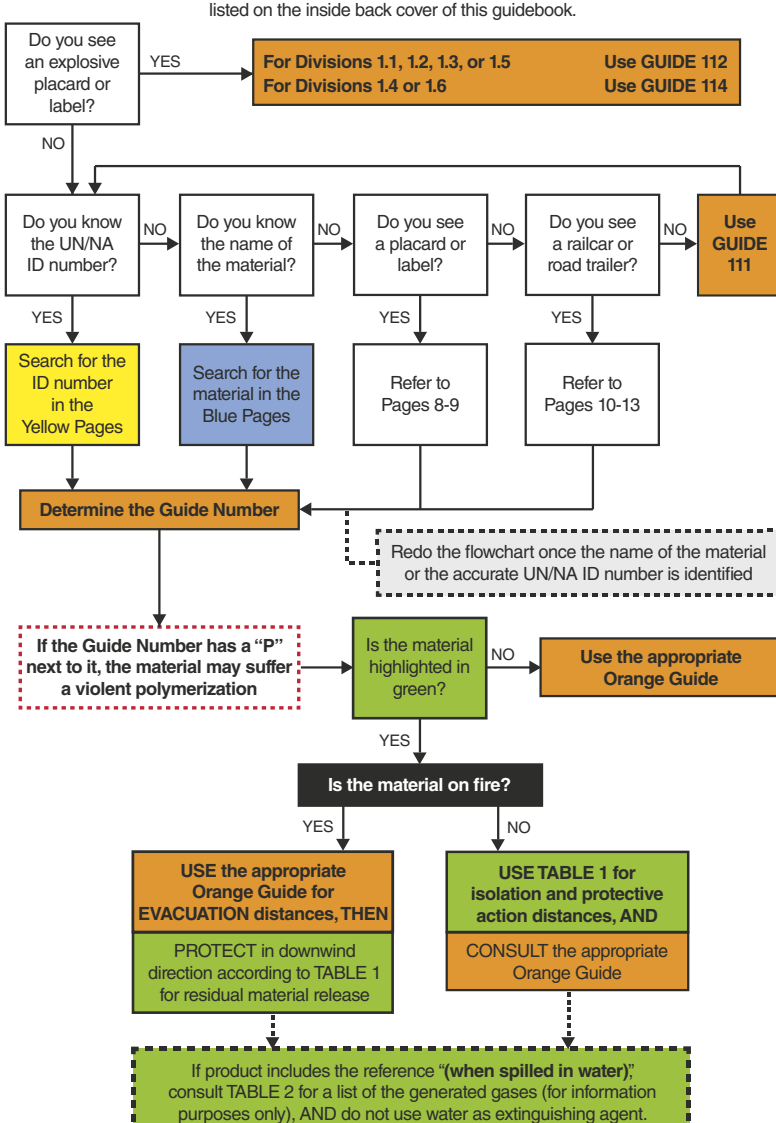
** In the United States, this requirement may be satisfied by attaching a guide from the ERG2016 to the shipping document, or by having the entire guidebook available for reference.

*** In the United States, a registration or contract number is required on a shipping document.

HOW TO USE THIS GUIDEBOOK

RESIST RUSHING IN!
APPROACH INCIDENT FROM UPWIND, AND UPHILL OR UPSTREAM
STAY CLEAR OF ALL SPILLS, VAPORS, FUMES, SMOKE, AND POTENTIAL HAZARDS

WARNING: DO NOT USE THIS FLOWCHART if more than one hazardous material/dangerous good is involved. Immediately call the appropriate emergency response agency telephone number listed on the inside back cover of this guidebook.



BEFORE AN EMERGENCY - BECOME FAMILIAR WITH THIS GUIDEBOOK!

First responders must be trained in the use of this guidebook.

LOCAL EMERGENCY TELEPHONE NUMBERS

Please populate this page with emergency telephone numbers for local assistance:

HAZMAT CONTRACTORS

RAIL COMPANIES

FEDERAL/STATE/PROVINCIAL AGENCIES

OTHERS

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SAFETY PRECAUTIONS

RESIST RUSHING IN!

APPROACH CAUTIOUSLY FROM *UPWIND, UPHILL* OR *UPSTREAM*:

- Stay clear of ***Vapor, Fumes, Smoke* and *Spills***
- Keep vehicle at a safe distance from the scene

SECURE THE SCENE:

- Isolate the area and protect yourself and others

IDENTIFY THE HAZARDS USING ANY OF THE FOLLOWING:

- Placards
- Container labels
- Shipping documents
- Rail Car and Road Trailer Identification Chart
- Material Safety Data Sheets (MSDS)
- Knowledge of persons on scene
- Consult applicable guide page

ASSESS THE SITUATION:

- Is there a fire, a spill or a leak?
- What are the weather conditions?
- What is the terrain like?
- Who/what is at risk: people, property or the environment?
- What actions should be taken – evacuation, shelter in-place or dike?
- What resources (human and equipment) are required?
- What can be done immediately?

OBTAIN HELP:

- Advise your headquarters to notify responsible agencies and call for assistance from qualified personnel

RESPOND:

- Enter only when wearing appropriate protective gear
- Rescue attempts and protecting property must be weighed against you becoming part of the problem
- Establish a command post and lines of communication
- Continually reassess the situation and modify response accordingly
- Consider safety of people in the immediate area first, including your own safety

ABOVE ALL: Do not assume that gases or vapors are harmless because of lack of a smell – odorless gases or vapors may be harmful. Use **CAUTION** when handling empty containers because they may still present hazards until they are cleaned and purged of all residues.

NOTIFICATION AND REQUEST FOR TECHNICAL INFORMATION

Follow the steps outlined in your organization's standard operating procedures and/or local emergency response plan for obtaining qualified assistance. Generally, the notification sequence and requests for technical information beyond what is available in this guidebook should occur in the following order:

1. NOTIFY YOUR ORGANIZATION/AGENCY

- Based on information provided, this will set in motion a series of events
- Actions may range from dispatching additional trained personnel to the scene, to activating the local emergency response plan
- Ensure that local fire and police departments have been notified

2. CALL THE EMERGENCY RESPONSE TELEPHONE NUMBER ON THE SHIPPING DOCUMENT

- If shipping paper is not available, use guidance under next section **"NATIONAL ASSISTANCE"**

3. NATIONAL ASSISTANCE

- Contact the appropriate emergency response agency listed on the inside back cover of this guidebook
- Provide as much information about the hazardous material and the nature of the incident
- The agency will provide immediate advice on handling the early stages of the incident
- The agency will also contact the shipper or manufacturer of the material for more detailed information if necessary
- The agency will request on-scene assistance when necessary

4. PROVIDE AS MUCH OF THE FOLLOWING INFORMATION AS POSSIBLE:

- Your name, call-back telephone number, fax number
- Location and nature of problem (spill, fire, etc.)
- Name and identification number of material(s) involved
- Shipper/consignee/point-of-origin
- Carrier name, rail car or truck number
- Container type and size
- Quantity of material transported/released
- Local conditions (weather, terrain)
- Proximity to schools, hospitals, waterways, etc.
- Injuries and exposures
- Local emergency services that have been notified

HAZARD CLASSIFICATION SYSTEM

The hazard class of dangerous goods is indicated either by its class (or division) number or name. Placards are used to identify the class or division of a material. The hazard class or division number must be displayed in the lower corner of a placard and is required for both primary and subsidiary hazard classes and divisions, if applicable. For other than Class 7 placards, text indicating a hazard (for example, "CORROSIVE") is not required. Text is shown only in the U.S. The hazard class or division number and subsidiary hazard classes or division numbers placed in parentheses (when applicable), must appear on the shipping document after each proper shipping name.

Class 1 - Explosives

Division 1.1	Explosives which have a mass explosion hazard
Division 1.2	Explosives which have a projection hazard but not a mass explosion hazard
Division 1.3	Explosives which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
Division 1.4	Explosives which present no significant blast hazard
Division 1.5	Very insensitive explosives with a mass explosion hazard
Division 1.6	Extremely insensitive articles which do not have a mass explosion hazard

Class 2 - Gases

Division 2.1	Flammable gases
Division 2.2	Non-flammable, non-toxic* gases
Division 2.3	Toxic* gases

Class 3 - Flammable liquids (and Combustible liquids [U.S.]**)**

Class 4 - Flammable solids; Substances liable to spontaneous combustion; Substances which, on contact with water, emit flammable gases

Division 4.1	Flammable solids, self-reactive substances and solid desensitized explosives
Division 4.2	Substances liable to spontaneous combustion
Division 4.3	Substances which in contact with water emit flammable gases

Class 5 - Oxidizing substances and Organic peroxides

Division 5.1	Oxidizing substances
Division 5.2	Organic peroxides

Class 6 - Toxic* substances and Infectious substances

Division 6.1	Toxic*substances
Division 6.2	Infectious substances

Class 7 - Radioactive materials

Class 8 - Corrosive substances

Class 9 - Miscellaneous dangerous goods/hazardous materials and articles

* The words "poison" or "poisonous" are synonymous with the word "toxic".

INTRODUCTION TO THE TABLE OF MARKINGS, LABELS AND PLACARDS

USE THIS TABLE ONLY WHEN THE ID NUMBER OR PROPER SHIPPING NAME IS NOT AVAILABLE.

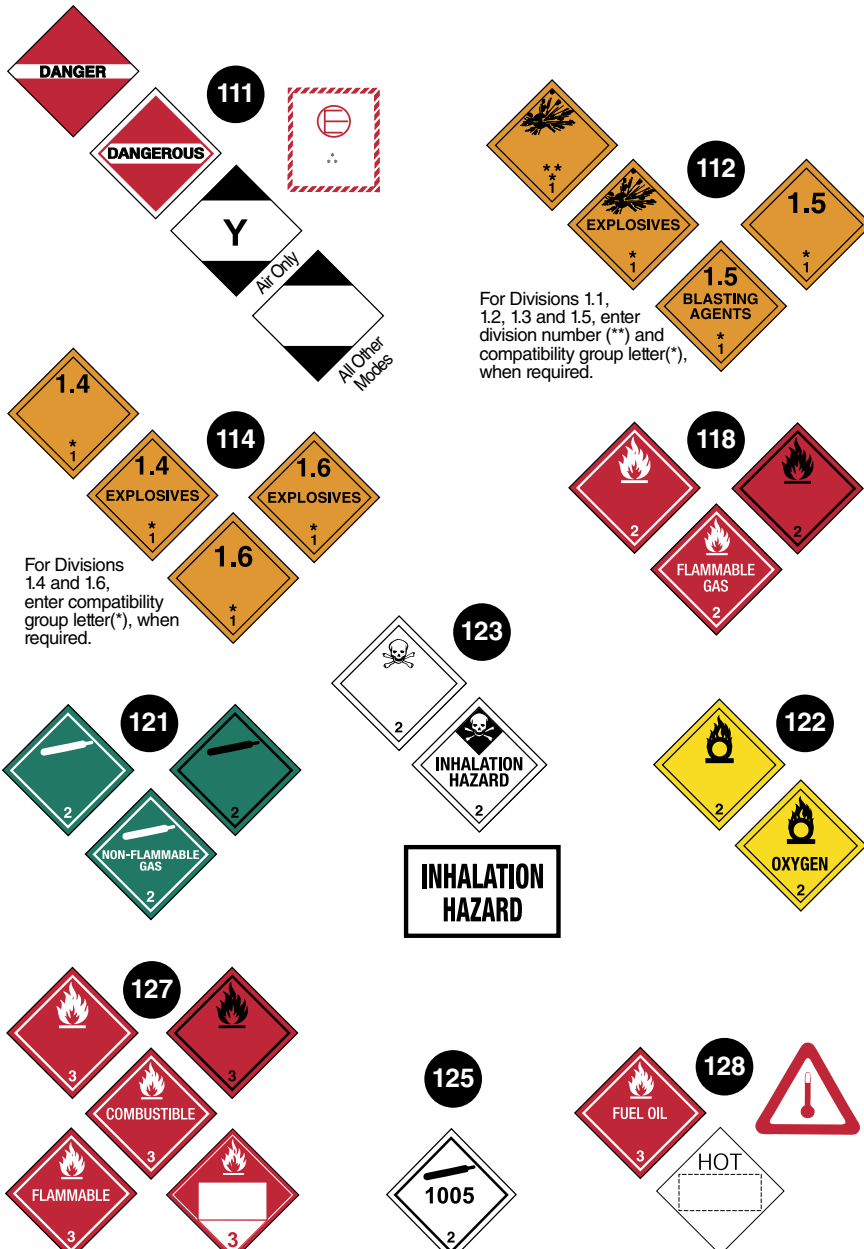
The next two pages display the placards used on transport vehicles carrying dangerous goods with the applicable reference GUIDE circled. Follow these steps:

1. **Approach scene from upwind, uphill or upstream at a safe distance to safely identify and/or read the placard or orange panel. Use binoculars if available.**
2. **Match the vehicle placard(s) with one of the placards displayed on the next two pages.**
3. **Consult the circled guide number associated with the placard. Use that guide information for now. For example:**
   - Use GUIDE **127** for a FLAMMABLE (Class 3) placard
   - Use GUIDE **153** for a CORROSIVE (Class 8) placard
   - Use GUIDE **111** when the DANGER/DANGEROUS placard is displayed or the nature of the spilled, leaking or burning material is not known. Also use this GUIDE when the presence of dangerous goods is suspected but no placards can be seen.

   If multiple placards point to more than one guide, initially use the most conservative guide (i.e., the guide requiring the greatest degree of protective actions).
4. **Guides associated with the placards provide the most significant risk and/or hazard information.**
5. **When specific information, such as ID number or proper shipping name, becomes available, the more specific Guide recommended for that material must be consulted.**
6. **A single asterisk (*) on orange placards represent an explosive's compatibility group letter. The asterisk must be replaced with the appropriate compatibility group letter. Refer to the Glossary (page 376).**
7. **Double asterisks (**) on orange placards represent the division of the explosive. The double asterisks must be replaced with the appropriate division number.**

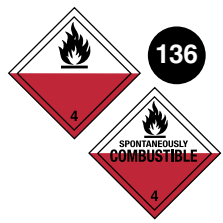
TABLE OF MARKINGS, LABELS, AND PLACARDS

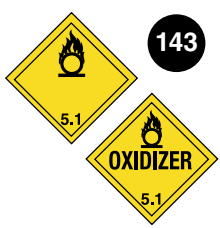
USE THIS TABLE ONLY IF MATERIALS CANNOT BE SPECIFICALLY IDENTIFIED BY

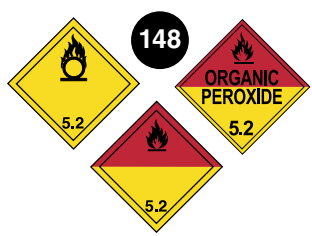


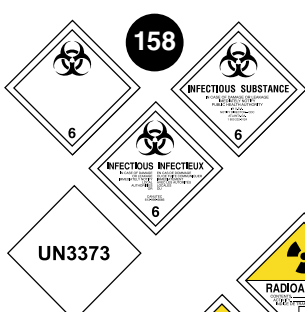
AND INITIAL RESPONSE GUIDE TO USE ON-SCENE

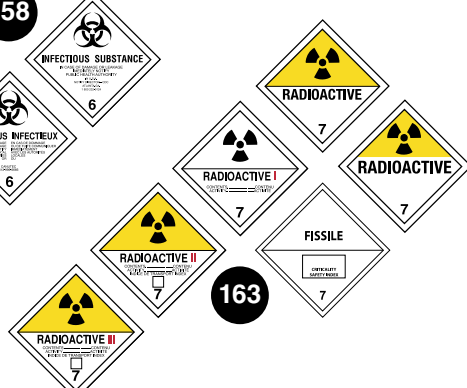
USING THE SHIPPING DOCUMENT, NUMBERED PLACARD, OR ORANGE PANEL NUMBER

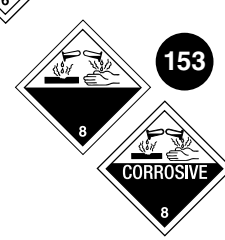






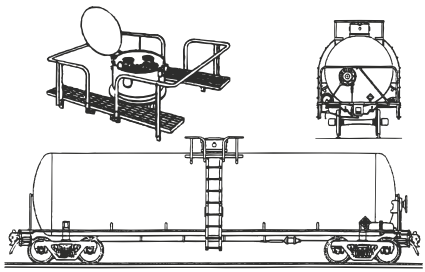






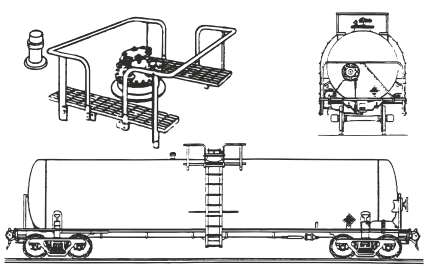
RAIL CAR IDENTIFICATION CHART*

117 Pressure tank car



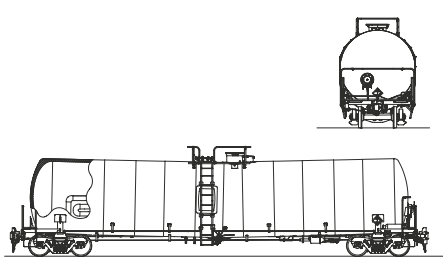
- For flammable, non-flammable, toxic and/or liquefied compressed gases
- Protective housing
- No bottom fittings
- Pressures usually above 40 psi

131 General service tank car (low pressure)



- For variety of hazardous and non-hazardous materials
- Fittings and valves normally visible at the top of the tank
- Some may have bottom outlet valve
- Pressures usually below 25 psi

128 Low pressure tank car (TC117, DOT117)

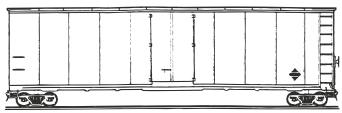


(Image provided as a courtesy of The Greenbrier Companies, Inc.)

- For flammable liquids (e.g., Petroleum crude oil, ethanol)
- Protective housing separate from manway
- Bottom outlet valve
- Pressures usually below 25 psi

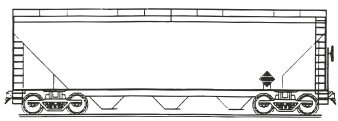
RAIL CAR IDENTIFICATION CHART*

111 Box car

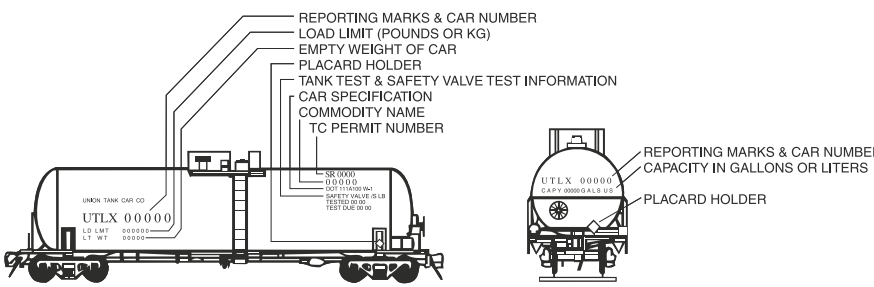


- For general freight that carry bulk or non-bulk packages
- May transport hazardous materials in small packages or "tote bins"
- Single or double sliding door

140 Hopper car



- For bulk commodities and bulk cargo (e.g., coal, ore, cement and solid granular materials)
- Bulk lading discharged by gravity through the hopper bottom doors when doors opened



CAUTION: Emergency response personnel must be aware that rail tank cars vary widely in construction, fittings and purpose. Tank cars could transport products that may be solids, liquids or gases. The products may be under pressure. It is essential that products be identified by consulting shipping documents or train consist or contacting dispatch centers before emergency response is initiated.

The information stenciled on the sides or ends of tank cars, as illustrated above, may be used to identify the product utilizing:

a. the commodity name shown; or
b. the other information shown, especially reporting marks and car number which, when supplied to a dispatch center, will facilitate the identification of the product.

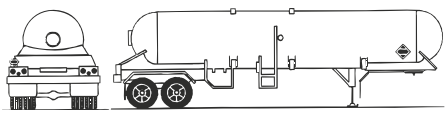
* **The recommended guides should be considered as last resort if the material cannot be identified by any other means.**

ROAD TRAILER IDENTIFICATION CHART*

WARNING: Road trailers may be jacketed, the cross-section may look different than shown and external ring stiffeners would be invisible.

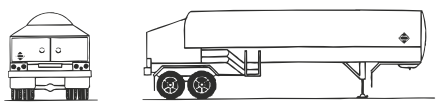
NOTE: An emergency shut-off valve is commonly found at the front of the tank, near the driver door.

117 MC331, TC331, SCT331



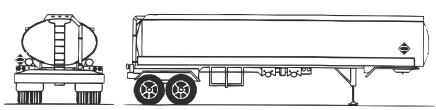
- For liquefied compressed gases (e.g., LPG, ammonia)
- Rounded heads
- Design pressure between 100-500 psi**

117 MC338, TC338, SCT338, TC341, CGA341



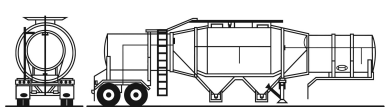
- For refrigerated liquefied gases (cryogenic liquids)
- Similar to a "giant thermo-bottle"
- Fitting compartments located in a cabinet at the rear of the tank
- MAWP between 25-500 psi**

131 DOT406, TC406, SCT306, MC306, TC306



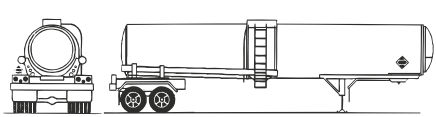
- For flammable liquids (e.g., gasoline, diesel)
- Elliptical cross-section
- Rollover protection at the top
- Bottom outlet valves
- MAWP between 3-15 psi**

112 TC423



- For emulsion and water-gel explosives
- Hopper-style configuration
- MAWP between 5-15 psi**

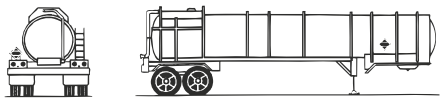
137 DOT407, TC407, SCT307, MC307, TC307



- For toxic, corrosive, and flammable liquids
- Circular cross-section
- May have external ring stiffeners
- MAWP of at least 25 psi**

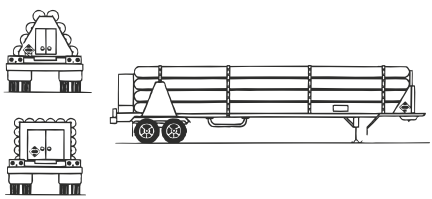
ROAD TRAILER IDENTIFICATION CHART*

137 DOT412, TC412, SCT312, MC312, TC312

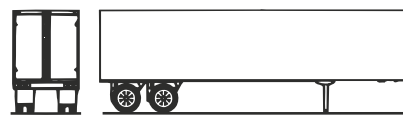


- Usually for corrosive liquids
- Circular cross-section
- External ring stiffeners
- Tank diameter is relatively small
- MAWP of at least 15 psi**

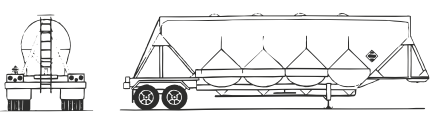
137 Compressed Gas/Tube Trailer



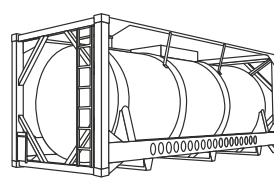
111 Mixed Cargo



134 Dry Bulk Cargo Trailer



117 Intermodal Tank



137 Vacuum Tanker

CAUTION: This chart depicts only the most general shapes of road trailers. Emergency response personnel must be aware that there are many variations of road trailers, not illustrated above, that are used for shipping chemical products. The suggested guides are for the most hazardous products that may be transported in these trailer types.

* **The recommended guides should be considered as last resort if the material cannot be identified by any other means.**

** **MAWP: Maximum Allowable Working Pressure.**

GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELING OF CHEMICALS (GHS)

(May be found on means of containment during transport)

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS) is an international guideline published by the United Nations. The GHS aims to harmonize the classification and labeling systems for all sectors involved in the life cycle of a chemical (production, storage, transport, workplace use, consumer use and presence in the environment).

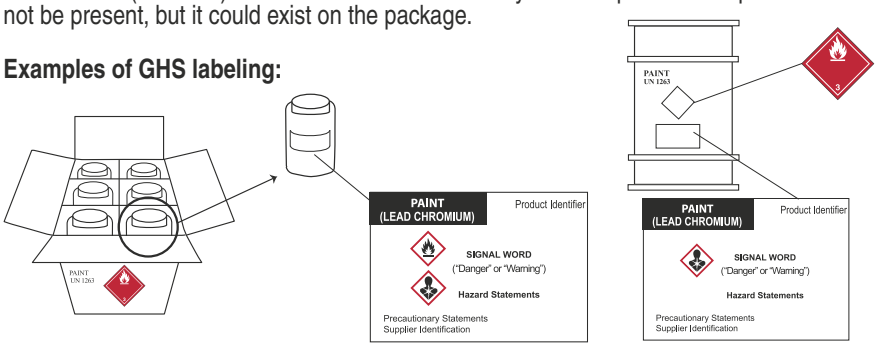
The GHS has nine symbols used to convey specific physical, health and environmental hazard information. These symbols are part of a pictogram that is diamond shaped and includes the GHS symbol in black on a white background with a red frame. The pictogram is part of the GHS label, which also includes the following information:

- **Signal word**
- **Hazard statement**
- **Precautionary statements**
- **Product identifier**
- **Supplier identification**

GHS pictograms are similar in shape to transport labels; however, transport labels have backgrounds of different colors.

The elements of the GHS that address signal words and hazard statements are not expected to be adopted in the transport sector. For substances and mixtures covered by the UN Recommendations on the Transport of Dangerous Goods, Model Regulations, the transport labels for physical hazards will have precedence. In transport, a GHS pictogram for the same (or lesser) hazard as the one reflected by the transport label or placard should not be present, but it could exist on the package.

Examples of GHS labeling:



Outer Packaging: Box with flammable liquid transport label

Inner Packaging: Plastic bottle with GHS hazard warning label

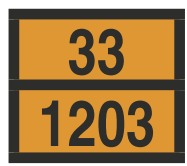
Single Packaging: 200 L (55 US gallons) drum with a flammable liquid transport label combined with GHS hazard warning label

In some cases, such as on drums or international bulk containers (IBCs), which must address information for all sectors, the GHS label may be found in addition to the required transport labels and placards. Both types of labels (GHS and transport) will differ in a way that will make them easy to identify during an emergency.

GHS Pictograms	Physical hazards	GHS Pictograms	Health and Environmental hazards
	Explosive; Self-reactive; Organic peroxide		Skin corrosion; Serious eye damage
	Flammable; Pyrophoric; Self-reactive; Organic peroxide; Self-heating; Emits flammable gases when in contact with water		Acute toxicity (harmful); Skin sensitizer; Irritant (skin and eye); Narcotic effect; Respiratory tract irritant; Hazardous to ozone layer (environment)
	Oxidizer		Respiratory sensitizer; Mutagen; Carcinogen; Reproductive toxicity; Target organ toxicity; Aspiration hazard
	Gas under pressure		Hazardous to aquatic environment
	Corrosive to metals		Acute toxicity (fatal or toxic)

HAZARD IDENTIFICATION NUMBERS DISPLAYED ON SOME INTERMODAL CONTAINERS

Hazard identification numbers, utilized under European and some South American regulations, may be found in the top half of an orange panel on some intermodal bulk containers. The United Nations 4-digit identification number is in the bottom half of the orange panel.



The hazard identification number in the top half of the orange panel consists of two or three digits. In general, the digits indicate the following hazards:

2 - Emission of gas due to pressure or chemical reaction

3 - Flammability of liquids (vapors) and gases or self-heating liquid

4 - Flammability of solids or self-heating solid

5 - Oxidizing (fire-intensifying) effect

6 - Toxicity or risk of infection

7 - Radioactivity

8 - Corrosivity

9 - Risk of spontaneous violent reaction

NOTE: The risk of spontaneous violent reaction within the meaning of digit 9 includes the possibility, due to the nature of a substance, of a risk of explosion, disintegration and polymerization reaction followed by the release of considerable heat or flammable and/or toxic gases.

- Doubling of a digit indicates an intensification of that particular hazard (i.e., 33, 66, 88).
- Where the hazard associated with a substance can be adequately indicated by a single digit, the digit is followed by a zero (i.e., 30, 40, 50).
- A hazard identification number prefixed by the letter “X” indicates that the substance will react dangerously with water (i.e., X88).

HAZARD IDENTIFICATION NUMBERS DISPLAYED ON SOME INTERMODAL CONTAINERS

The hazard identification numbers listed below have the following meanings:

20	Asphyxiant gas or gas with no subsidiary risk
22	Refrigerated liquefied gas, asphyxiant
223	Refrigerated liquefied gas, flammable
225	Refrigerated liquefied gas, oxidizing (fire-intensifying)
23	Flammable gas
238	Gas, flammable corrosive
239	Flammable gas which can spontaneously lead to violent reaction
25	Oxidizing (fire-intensifying) gas
26	Toxic gas
263	Toxic gas, flammable
265	Toxic gas, oxidizing (fire-intensifying)
268	Toxic gas, corrosive
28	Gas, corrosive
30	Flammable liquid (flash-point between 23°C and 60°C, inclusive), or flammable liquid or solid in the molten state with a flash point above 60°C, heated to a temperature equal to or above its flash point, or self-heating liquid
323	Flammable liquid which reacts with water, emitting flammable gases
X323	Flammable liquid which reacts dangerously with water, emitting flammable gases
33	Highly flammable liquid (flash-point below 23°C)
333	Pyrophoric liquid
X333	Pyrophoric liquid which reacts dangerously with water
336	Highly flammable liquid, toxic
338	Highly flammable liquid, corrosive
X338	Highly flammable liquid, corrosive, which reacts dangerously with water
339	Highly flammable liquid which can spontaneously lead to violent reaction
36	Flammable liquid (flash-point between 23°C and 60°C, inclusive), slightly toxic, or self-heating liquid, toxic
362	Flammable liquid, toxic, which reacts with water, emitting flammable gas
X362	Flammable liquid, toxic, which reacts dangerously with water, emitting flammable gases
368	Flammable liquid, toxic, corrosive
38	Flammable liquid (flash-point between 23°C and 60°C, inclusive), slightly corrosive or self-heating liquid, corrosive
382	Flammable liquid, corrosive, which reacts with water, emitting flammable gases
X382	Flammable liquid, corrosive, which reacts dangerously with water, emitting flammable gases
39	Flammable liquid, which can spontaneously lead to violent reaction
40	Flammable solid, or self-reactive substance, or self-heating substance

HAZARD IDENTIFICATION NUMBERS DISPLAYED ON SOME INTERMODAL CONTAINERS

423	Solid which reacts with water, emitting flammable gases, or flammable solid which reacts with water, emitting flammable gases, or self-heating solid which reacts with water, emitting flammable gases
X423	Solid which reacts dangerously with water, emitting flammable gases, or flammable solid which reacts dangerously with water, emitting flammable gases, or self-heating solid which reacts dangerously with water, emitting flammable gases
43	Spontaneously flammable (pyrophoric) solid
X432	Spontaneously flammable (pyrophoric) solid which reacts dangerously with water, emitting flammable gases
44	Flammable solid, in the molten state at an elevated temperature
446	Flammable solid, toxic, in the molten state at an elevated temperature
46	Flammable or self-heating solid, toxic
462	Toxic solid which reacts with water, emitting flammable gases
X462	Solid which reacts dangerously with water, emitting toxic gases
48	Flammable or self-heating solid, corrosive
482	Corrosive solid which reacts with water, emitting flammable gases
X482	Solid which reacts dangerously with water, emitting corrosive gases
50	Oxidizing (fire-intensifying) substance
539	Flammable organic peroxide
55	Strongly oxidizing (fire-intensifying) substance
556	Strongly oxidizing (fire-intensifying) substance, toxic
558	Strongly oxidizing (fire-intensifying) substance, corrosive
559	Strongly oxidizing (fire-intensifying) substance which can spontaneously lead to violent reaction
56	Oxidizing substance (fire-intensifying), toxic
568	Oxidizing substance (fire-intensifying), toxic, corrosive
58	Oxidizing substance (fire-intensifying), corrosive
59	Oxidizing substance (fire-intensifying) which can spontaneously lead to violent reaction
60	Toxic or slightly toxic substance
606	Infectious substance
623	Toxic liquid, which reacts with water, emitting flammable gases
63	Toxic substance, flammable (flash-point between 23°C and 60°C, inclusive)
638	Toxic substance, flammable, (flash-point between 23°C and 60°C, inclusive), corrosive
639	Toxic substance, flammable, (flash-point not above 60°C) which can spontaneously lead to violent reaction
64	Toxic solid, flammable or self-heating
642	Toxic solid which reacts with water, emitting flammable gases
65	Toxic substance, oxidizing (fire-intensifying)

HAZARD IDENTIFICATION NUMBERS DISPLAYED ON SOME INTERMODAL CONTAINERS

66	Highly toxic substance
663	Highly toxic substance, flammable (flash-point not above 60°C)
664	Highly toxic solid, flammable or self-heating
665	Highly toxic substance, oxidizing (fire-intensifying)
668	Highly toxic substance, corrosive
X668	Highly toxic substance, corrosive, which reacts dangerously with water
669	Highly toxic substance which can spontaneously lead to violent reaction
68	Toxic substance, corrosive
69	Toxic or slightly toxic substance which can spontaneously lead to violent reaction
70	Radioactive material
78	Radioactive material, corrosive
80	Corrosive or slightly corrosive substance
X80	Corrosive or slightly corrosive substance which reacts dangerously with water
823	Corrosive liquid which reacts with water, emitting flammable gases
83	Corrosive or slightly corrosive substance, flammable (flash-point between 23°C and 60°C, inclusive)
X83	Corrosive or slightly corrosive substance, flammable (flash-point between 23°C and 60°C, inclusive), which reacts dangerously with water
839	Corrosive or slightly corrosive substance, flammable (flash-point between 23°C and 60°C, inclusive), which can spontaneously lead to violent reaction
X839	Corrosive or slightly corrosive substance, flammable (flash-point between 23°C and 60°C, inclusive), which can spontaneously lead to violent reaction and which reacts dangerously with water
84	Corrosive solid, flammable or self-heating
842	Corrosive solid which reacts with water, emitting flammable gases
85	Corrosive or slightly corrosive substance, oxidizing (fire-intensifying)
856	Corrosive or slightly corrosive substance, oxidizing (fire-intensifying) and toxic
86	Corrosive or slightly corrosive substance, toxic
88	Highly corrosive substance
X88	Highly corrosive substance which reacts dangerously with water
883	Highly corrosive substance, flammable (flash-point between 23°C and 60°C, inclusive)
884	Highly corrosive solid, flammable or self-heating
885	Highly corrosive substance, oxidizing (fire-intensifying)
886	Highly corrosive substance, toxic
X886	Highly corrosive substance, toxic, which reacts dangerously with water
89	Corrosive or slightly corrosive substance which can spontaneously lead to violent reaction
90	Environmentally hazardous substance; miscellaneous dangerous substances
99	Miscellaneous dangerous substance carried at an elevated temperature

PIPELINE TRANSPORTATION

In North America, hazardous materials are commonly transported through millions of miles of pipelines and related structures. Products transported include natural gas, natural gas liquids, crude oil, gasoline, diesel fuel, anhydrous ammonia, carbon dioxide, jet fuel, and other commodities. Although most pipelines are buried, often there are above-ground structures and markers indicating the presence of pipelines. First responders should be aware of the pipelines in their jurisdictions, the products they transport, and the operators responsible for those pipelines. Proactive relationships can be beneficial in the safe and effective management of pipeline emergencies.

Types of Pipelines

Natural Gas Pipelines

Natural Gas Transmission Pipelines

Large-diameter, steel pipelines transport flammable natural gas (toxic and non-toxic) at very high pressures ranging from 200 to 1,500 psi*. Natural gas in transmission pipelines is odorless — generally *not odorized* with mercaptan (the "rotten egg" smell); however, natural gas containing hydrogen sulfide (H_2S) *will* have a distinct "rotten egg" odor.

Natural Gas Distribution Pipelines

Natural gas is delivered directly to customers via distribution pipelines. These pipelines are typically smaller-diameter, lower-pressure pipelines constructed of steel, plastic, or cast iron. Natural gas in distribution pipelines *is odorized* with mercaptan (the "rotten egg" smell).

Natural Gas-Gathering and Natural Gas Well Production Pipelines

Natural gas-gathering/well production pipelines collect "raw" natural gas from wellheads and transport the product to gas-processing and/or gas-treating plants. These gathering pipelines carry natural gas mixed with some quantity of gas liquids, water, and, in some areas, contaminants such as toxic hydrogen sulfide (H_2S). Natural gas in these pipelines is *not odorized* with mercaptan (the "rotten egg" smell); however, natural gas that contains hydrogen sulfide (H_2S) will have a distinct "rotten egg" odor.

Liquid Petroleum and Hazardous Liquids Pipelines

Liquid Petroleum Pipelines

Crude oil, refined petroleum products, and hazardous liquids often are transported by pipelines and include gasoline, jet fuels, diesel fuel, home heating oils, carbon dioxide, anhydrous ammonia, and other hazardous liquids.

Many liquid petroleum pipelines transport different types of liquid petroleum in the same pipeline. To do so, the pipeline operator sends different products in "batches." For example, an operator could send gasoline for several hours, and then switch to jet fuels, before switching to diesel fuel.

* Data from http://naturalgas.org/naturalgas/transport/

Other Hazardous Liquids Pipelines

Some liquid pipelines transport highly volatile liquids that rapidly change from liquid to gaseous when released from a pressurized pipeline. Examples of these types of liquids include carbon dioxide, anhydrous ammonia, propane, and others.

Pipeline Markers

Since pipelines are usually buried underground, pipeline markers are used to indicate their presence in an area along the pipeline route. Of the three types of pipelines typically buried underground — distribution, gathering, and transmission — only transmission pipelines are marked with the following above-ground markers used to indicate their route.

Markers warn that a transmission pipeline is located in the area, identify the product transported in the line, and provide the name and telephone number of the pipeline operator to call. Markers and warning signs are located at frequent intervals along natural gas and liquid transmission pipeline rights-of-way, and are located at prominent points such as where pipelines intersect streets, highways, railways, or waterways.

Pipeline markers only indicate the presence of a pipeline—they do not indicate the exact location of the pipeline. Pipeline locations within a right-of-way may vary along its length and there may be multiple pipelines located in the same right-of-way.

NOTE:

- Markers for pipelines transporting materials containing dangerous levels of hydrogen sulfide (H_2S) may have markers that say: “Sour” or “Poison.”
- Natural gas distribution pipelines are not marked with above-ground signs.
- Gathering/production pipelines are often not marked with above-ground signs.

Pipeline Structures (Above Ground)

Natural Gas Transmission Pipelines:	Compressor stations, valves, metering stations.
Natural Gas Distribution Pipelines:	Regulator stations, customer meters and regulators, valve box covers.
Natural Gas Gathering/Well Production Pipelines:	Compressor stations, valves, metering stations, wellheads, piping, manifolds.
Petroleum and Hazardous Liquids Pipelines:	Storage tanks, valves, pump stations, loading racks.

Indications of Pipeline Leaks and Ruptures

Pipeline releases can range from relatively minor leaks to catastrophic ruptures. It is important to remember that gases and liquids behave differently once they are released from a pipeline. Generally, the following could be indications of a pipeline leak or rupture:

- Hissing, roaring, or explosive sound
- Flames appearing from the ground or water (perhaps very large flames)
- Vapor cloud/fog/mist
- Dirt/debris/water blowing out of the ground
- Liquids bubbling up from the ground or bubbling in water
- Distinctive, unusually strong odor of rotten eggs, skunk, or petroleum
- Discolored/dead vegetation or discolored snow above a pipeline right-of-way
- Oil slick or sheen on flowing/standing water

General Considerations for Responding to a Pipeline Emergency

- **Safety First!** Your safety and the safety of the community you protect is top priority. Remember to approach a pipeline incident from upwind, uphill, and upstream while using air monitoring equipment to detect for the presence of explosive and/or toxic levels of hazardous materials.
  - **Always** wear proper personal protective equipment. Be prepared for a flash fire. Use shielding to protect first responders in the event of an explosion. Use respiratory protection.
  - **Never** operate pipeline valves (except in coordination with the pipeline operator); this could make the incident worse and put you and others in danger.
  - **Never** attempt to extinguish a pipeline fire before supply is shut off; this could result in the accumulation of a large flammable/explosive vapor cloud or liquid pool that could make the incident worse and put you and others in danger.
  - **Do not** enter a vapor cloud in an attempt to identify the product(s) involved.
- **Secure the site** and determine a plan to evacuate or shelter-in-place. Work with other responders to deny entry to an area.
- **Identify the product and the operator.** If safe to do so, you may be able to identify the product based on its characteristics or other external clues. Look for pipeline markers indicating the product, operator of the pipeline, and their emergency contact information. Pipelines transport many different types of products, including gases, liquids, and highly volatile liquids that are in a liquid state inside the pipeline but in a gaseous state if released from the pipeline. The vapor density of gases determines if they rise or sink in air. Viscosity and specific gravity also are important characteristics of hazardous liquids to consider. Identification of the product also will help you determine the appropriate distance for isolation of the affected area.
- **Notify the pipeline operator** using the emergency contact information on the pipeline marker or other contact information you may have received from the pipeline operator. The pipeline operator will be a resource to you in the response.
- **Establish a command post.** Implement the Incident Command Structure, as needed, and be prepared to implement a Unified Command as additional stakeholders and resources arrive.

Other Important Considerations

- If no flames are present, do not introduce ignition sources such as open flames, running vehicles, or electrical equipment (cell phones, pagers, two-way radios, lights, garage door openers, fans, door bells, etc.).
- Abandon any equipment used in or near the area of the pipeline release.
- If there is no risk to your safety or the safety of others, move far enough away from any noise coming from the pipeline to allow for normal conversation.
- Pipelines often are close to other public utilities, railroads, and highways; these can be impacted by pipeline releases or may be potential ignition sources.
- Natural gas can migrate underground from the source of a release to other areas via the path of least resistance (including through sewers, water lines, and geologic formations).

Considerations for Establishing Protective Action Distances

- Type of product
  - If you know the material involved, identify the three-digit guide number by looking up the name in the alphabetical list (blue-bordered pages), then using the three-digit guide number, consult the recommendations in the assigned guide.
- Pressure and diameter of pipe (the pipeline operator can tell you this if you don't already know it)
- Timing of valve closure by the pipeline operator (quickly for automated valves; longer for manually operated valves)
- Dissipation time of the product in the pipeline once valves are closed
- Ability to conduct atmospheric monitoring and/or air sampling
- Weather (wind direction, etc.)
- Local variables such as topography, population density, demographics, and fire suppression methods available
- Nearby building construction material/density
- Natural and man-made barriers (such as highways, railroads, rivers, etc.)

U.S. Pipeline Resources

U.S. Pipeline Locations: The National Pipeline Mapping System (NPMS) *http://www.npms.phmsa.dot.gov* indicates the general locations of hazardous liquids and natural gas transmission pipelines found within the U.S. The pipelines depicted in the NPMS are within 500 feet of their actual locations. Emergency responders may apply for an NPMS web viewer account that will allow access to more detailed information than is available to the general public. The NPMS does not contain gathering/production or natural gas distribution pipelines.

U.S. Pipeline Emergency Response Training: Where appropriate, reference Pipeline Emergencies training materials, produced by PHMSA and the National Association of State Fire Marshals (NASFM). This training guide is available at *http://www.pipelineemergencies.com* and *http://nasfm-training.org/pipeline* and offers a thorough overview of U.S. pipeline operations and emergency response considerations. Your state or jurisdiction also may provide training on how to handle the response to a pipeline incident.

Other Resources:

Pipeline Association for Public Awareness *http://www.pipelineawareness.org/*

U.S. DOT, Pipeline and Hazardous Materials Safety Administration *http://phmsa.dot.gov/pipeline*

Pipeline 101 *http://pipeline101.com/*

Canadian Pipeline Resources

Canadian Pipeline Locations: The Canadian Energy Pipeline Association (CEPA) provides the general locations of natural gas and liquid pipelines found within Canada.

http://www.cepa.com/library/maps

GREEN HIGHLIGHTED ENTRIES IN YELLOW PAGES

For entries highlighted in green follow these steps:

- **IF THERE IS NO FIRE**:
  - Go directly to **Table 1** (green-bordered pages)
  - Look up the ID number and name of material
  - Identify initial isolation and protective action distances

- **IF A FIRE IS INVOLVED**:
  - Also consult the assigned orange guide
  - If applicable, apply the evacuation information shown under PUBLIC SAFETY

Note 1: If the name in **Table 1** is shown with ***"(when spilled in water)"***, these materials produce large amounts of Toxic Inhalation Hazard (TIH) (PIH in the US) gases when spilled in water. Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (UN1746), Thionyl chloride (UN1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material **is NOT** a TIH and this material **is NOT** spilled in water, **Table 1** and **Table 2 do NOT** apply and safety distances will be found within the appropriate orange guide.

Note 2: **Explosives** are not individually listed by their ID number because in an emergency situation, the response will be based only on the division of the explosive, not on the individual explosive.

For divisions 1.1, 1.2, 1.3 and 1.5, refer to GUIDE 112.

For divisions 1.4 and 1.6, refer to GUIDE 114.

ID No.	Guide No.	Name of Material
——	**112**	Ammonium nitrate-fuel oil mixtures
——	**158**	Biological agents
——	**112**	Blasting agent, n.o.s.
——	**112**	Explosives, division 1.1, 1.2, 1.3 or 1.5
——	**114**	Explosives, division 1.4 or 1.6
——	**153**	Toxins
1001	**116**	Acetylene, dissolved
1002	**122**	Air, compressed
1003	**122**	Air, refrigerated liquid (cryogenic liquid)
1003	**122**	Air, refrigerated liquid (cryogenic liquid), non-pressurized
1005	**125**	Ammonia, anhydrous
1005	**125**	Anhydrous ammonia
1006	**121**	Argon
1006	**121**	Argon, compressed
1008	**125**	Boron trifluoride
1008	**125**	Boron trifluoride, compressed
1009	**126**	Bromotrifluoromethane
1009	**126**	Refrigerant gas R-13B1
1010	**116P**	Butadienes, stabilized
1010	**116P**	Butadienes and hydrocarbon mixture, stabilized
1010	**116P**	Hydrocarbon and butadienes mixture, stabilized
1011	**115**	Butane
1012	**115**	Butylene
1013	**120**	Carbon dioxide
1013	**120**	Carbon dioxide, compressed
1014	**122**	Carbon dioxide and Oxygen mixture, compressed
1014	**122**	Oxygen and Carbon dioxide mixture, compressed
1015	**126**	Carbon dioxide and Nitrous oxide mixture
1015	**126**	Nitrous oxide and Carbon dioxide mixture
1016	**119**	Carbon monoxide
1016	**119**	Carbon monoxide, compressed
1017	**124**	Chlorine
1018	**126**	Chlorodifluoromethane
1018	**126**	Refrigerant gas R-22
1020	**126**	Chloropentafluoroethane
1020	**126**	Refrigerant gas R-115
1021	**126**	1-Chloro-1,2,2,2-tetrafluoroethane
1021	**126**	Refrigerant gas R-124
1022	**126**	Chlorotrifluoromethane
1022	**126**	Refrigerant gas R-13
1023	**119**	Coal gas
1023	**119**	Coal gas, compressed
1026	**119**	Cyanogen
1027	**115**	Cyclopropane
1028	**126**	Dichlorodifluoromethane
1028	**126**	Refrigerant gas R-12
1029	**126**	Dichlorofluoromethane
1029	**126**	Refrigerant gas R-21
1030	**115**	1,1-Difluoroethane
1030	**115**	Refrigerant gas R-152a
1032	**118**	Dimethylamine, anhydrous
1033	**115**	Dimethyl ether
1035	**115**	Ethane
1035	**115**	Ethane, compressed
1036	**118**	Ethylamine

ID No.	Guide No.	Name of Material
1037	**115**	Ethyl chloride
1038	**115**	Ethylene, refrigerated liquid (cryogenic liquid)
1039	**115**	Ethyl methyl ether
1039	**115**	Methyl ethyl ether
1040	**119P**	Ethylene oxide
1040	**119P**	Ethylene oxide with Nitrogen
1041	**115**	Carbon dioxide and Ethylene oxide mixture, with more than 9% but not more than 87% Ethylene oxide
1041	**115**	Ethylene oxide and Carbon dioxide mixture, with more than 9% but not more than 87% Ethylene oxide
1043	**125**	Fertilizer, ammoniating solution, with free Ammonia
1044	**126**	Fire extinguishers with compressed gas
1044	**126**	Fire extinguishers with liquefied gas
1045	**124**	Fluorine
1045	**124**	Fluorine, compressed
1046	**121**	Helium
1046	**121**	Helium, compressed
1048	**125**	Hydrogen bromide, anhydrous
1049	**115**	Hydrogen
1049	**115**	Hydrogen, compressed
1050	**125**	Hydrogen chloride, anhydrous
1051	**117**	AC
1051	**117**	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide
1051	**117**	Hydrogen cyanide, anhydrous, stabilized
1051	**117**	Hydrogen cyanide, stabilized

ID No.	Guide No.	Name of Material
1052	**125**	Hydrogen fluoride, anhydrous
1053	**117**	Hydrogen sulfide
1053	**117**	Hydrogen sulphide
1055	**115**	Isobutylene
1056	**121**	Krypton
1056	**121**	Krypton, compressed
1057	**115**	Lighter refills (cigarettes) (flammable gas)
1057	**115**	Lighters (cigarettes) (flammable gas)
1057	**128**	Lighters, non-pressurized, containing flammable liquid
1058	**120**	Liquefied gases, non-flammable, charged with Nitrogen, Carbon dioxide or Air
1060	**116P**	Methylacetylene and Propadiene mixture, stabilized
1060	**116P**	Propadiene and Methylacetylene mixture, stabilized
1061	**118**	Methylamine, anhydrous
1062	**123**	Methyl bromide
1063	**115**	Methyl chloride
1063	**115**	Refrigerant gas R-40
1064	**117**	Methyl mercaptan
1065	**121**	Neon
1065	**121**	Neon, compressed
1066	**121**	Nitrogen
1066	**121**	Nitrogen, compressed
1067	**124**	Dinitrogen tetroxide
1067	**124**	Nitrogen dioxide
1069	**125**	Nitrosyl chloride
1070	**122**	Nitrous oxide

ID No.	Guide No.	Name of Material
1070	**122**	Nitrous oxide, compressed
1071	**119**	Oil gas
1071	**119**	Oil gas, compressed
1072	**122**	Oxygen
1072	**122**	Oxygen, compressed
1073	**122**	Oxygen, refrigerated liquid (cryogenic liquid)
1075	**115**	Butane
1075	**115**	Butylene
1075	**115**	Isobutane
1075	**115**	Isobutylene
1075	**115**	Liquefied petroleum gas
1075	**115**	LPG
1075	**115**	Petroleum gases, liquefied
1075	**115**	Propane
1075	**115**	Propylene
1076	**125**	CG
1076	**125**	DP
1076	**125**	Phosgene
1077	**115**	Propylene
1078	**126**	Dispersant gas, n.o.s.
1078	**126**	Refrigerant gas, n.o.s.
1079	**125**	Sulfur dioxide
1079	**125**	Sulphur dioxide
1080	**126**	Sulfur hexafluoride
1080	**126**	Sulphur hexafluoride
1081	**116P**	Tetrafluoroethylene, stabilized
1082	**119P**	Refrigerant gas R-1113
1082	**119P**	Trifluorochloroethylene, stabilized
1083	**118**	Trimethylamine, anhydrous
1085	**116P**	Vinyl bromide, stabilized
1086	**116P**	Vinyl chloride, stabilized
1087	**116P**	Vinyl methyl ether, stabilized
1088	**127**	Acetal
1089	**129P**	Acetaldehyde
1090	**127**	Acetone
1091	**127**	Acetone oils
1092	**131P**	Acrolein, stabilized
1093	**131P**	Acrylonitrile, stabilized
1098	**131**	Allyl alcohol
1099	**131**	Allyl bromide
1100	**131**	Allyl chloride
1104	**129**	Amyl acetates
1105	**129**	Pentanols
1106	**132**	Amylamine
1107	**129**	Amyl chloride
1108	**128**	n-Amylene
1108	**128**	1-Pentene
1109	**129**	Amyl formates
1110	**127**	n-Amyl methyl ketone
1110	**127**	Methyl amyl ketone
1111	**130**	Amyl mercaptan
1112	**140**	Amyl nitrate
1113	**129**	Amyl nitrite
1114	**130**	Benzene
1120	**129**	Butanols
1123	**129**	Butyl acetates
1125	**132**	n-Butylamine
1126	**130**	1-Bromobutane
1126	**130**	n-Butyl bromide
1127	**130**	n-Butyl chloride
1127	**130**	Chlorobutanes

ID No.	Guide No.	Name of Material
1128	129	n-Butyl formate
1129	129	Butyraldehyde
1130	128	Camphor oil
1131	131	Carbon bisulfide
1131	131	Carbon bisulphide
1131	131	Carbon disulfide
1131	131	Carbon disulphide
1133	128	Adhesives (flammable)
1134	130	Chlorobenzene
1135	131	Ethylene chlorohydrin
1136	128	Coal tar distillates, flammable
1139	127	Coating solution
1143	131P	Crotonaldehyde
1143	131P	Crotonaldehyde, stabilized
1144	128	Crotonylene
1145	128	Cyclohexane
1146	128	Cyclopentane
1147	130	Decahydronaphthalene
1148	129	Diacetone alcohol
1149	128	Butyl ethers
1149	128	Dibutyl ethers
1150	130P	1,2-Dichloroethylene
1152	130	Dichloropentanes
1153	127	Ethylene glycol diethyl ether
1154	132	Diethylamine
1155	127	Diethyl ether
1155	127	Ethyl ether
1156	127	Diethyl ketone
1157	128	Diisobutyl ketone
1158	132	Diisopropylamine
1159	127	Diisopropyl ether

ID No.	Guide No.	Name of Material
1160	132	Dimethylamine, aqueous solution
1160	132	Dimethylamine, solution
1161	129	Dimethyl carbonate
1162	155	Dimethyldichlorosilane
1163	131	1,1-Dimethylhydrazine
1163	131	Dimethylhydrazine, unsymmetrical
1164	130	Dimethyl sulfide
1164	130	Dimethyl sulphide
1165	127	Dioxane
1166	127	Dioxolane
1167	128P	Divinyl ether, stabilized
1169	127	Extracts, aromatic, liquid
1170	127	Ethanol
1170	127	Ethanol, solution
1170	127	Ethyl alcohol
1170	127	Ethyl alcohol, solution
1171	127	Ethylene glycol monoethyl ether
1172	129	Ethylene glycol monoethyl ether acetate
1173	129	Ethyl acetate
1175	130	Ethylbenzene
1176	129	Ethyl borate
1177	130	2-Ethylbutyl acetate
1177	130	Ethylbutyl acetate
1178	130	2-Ethylbutyraldehyde
1179	127	Ethyl butyl ether
1180	130	Ethyl butyrate
1181	155	Ethyl chloroacetate
1182	155	Ethyl chloroformate
1183	139	Ethyldichlorosilane

ID No.	Guide No.	Name of Material
1184	131	Ethylene dichloride
1185	131P	Ethyleneimine, stabilized
1188	127	Ethylene glycol monomethyl ether
1189	129	Ethylene glycol monomethyl ether acetate
1190	129	Ethyl formate
1191	129	Ethylhexaldehydes
1191	129	Octyl aldehydes
1192	129	Ethyl lactate
1193	127	Ethyl methyl ketone
1193	127	Methyl ethyl ketone
1194	131	Ethyl nitrite, solution
1195	129	Ethyl propionate
1196	155	Ethyltrichlorosilane
1197	127	Extracts, flavoring, liquid
1197	127	Extracts, flavouring, liquid
1198	132	Formaldehyde, solution, flammable
1198	132	Formalin (flammable)
1199	132P	Furaldehydes
1199	132P	Furfural
1199	132P	Furfuraldehydes
1201	127	Fusel oil
1202	128	Diesel fuel
1202	128	Fuel oil
1202	128	Gas oil
1202	128	Heating oil, light
1203	128	Gasohol
1203	128	Gasoline
1203	128	Motor spirit
1203	128	Petrol

ID No.	Guide No.	Name of Material
1204	127	Nitroglycerin, solution in alcohol, with not more than 1% Nitroglycerin
1206	128	Heptanes
1207	130	Hexaldehyde
1208	128	Hexanes
1208	128	Neohexane
1210	129	Ink, printer's, flammable
1210	129	Printing ink, flammable
1210	129	Printing ink related material
1212	129	Isobutanol
1212	129	Isobutyl alcohol
1213	129	Isobutyl acetate
1214	132	Isobutylamine
1216	128	Isooctenes
1218	130P	Isoprene, stabilized
1219	129	Isopropanol
1219	129	Isopropyl alcohol
1220	129	Isopropyl acetate
1221	132	Isopropylamine
1222	130	Isopropyl nitrate
1223	128	Kerosene
1224	127	Ketones, liquid, n.o.s.
1228	131	Mercaptan mixture, liquid, flammable, poisonous, n.o.s.
1228	131	Mercaptan mixture, liquid, flammable, toxic, n.o.s.
1228	131	Mercaptans, liquid, flammable, poisonous, n.o.s.
1228	131	Mercaptans, liquid, flammable, toxic, n.o.s.
1229	129	Mesityl oxide
1230	131	Methanol
1230	131	Methyl alcohol

ID No.	Guide No.	Name of Material
1231	129	Methyl acetate
1233	130	Methylamyl acetate
1234	127	Methylal
1235	132	Methylamine, aqueous solution
1237	129	Methyl butyrate
1238	155	Methyl chloroformate
1239	131	Methyl chloromethyl ether
1242	139	Methyldichlorosilane
1243	129	Methyl formate
1244	131	Methylhydrazine
1245	127	Methyl isobutyl ketone
1246	127P	Methyl isopropenyl ketone, stabilized
1247	129P	Methyl methacrylate monomer, stabilized
1248	129	Methyl propionate
1249	127	Methyl propyl ketone
1250	155	Methyltrichlorosilane
1251	131P	Methyl vinyl ketone, stabilized
1259	131	Nickel carbonyl
1261	129	Nitromethane
1262	128	Isooctane
1262	128	Octanes
1263	128	Paint (flammable)
1263	128	Paint related material (flammable)
1264	129	Paraldehyde
1265	128	Isopentane
1265	128	Pentanes
1266	127	Perfumery products, with flammable solvents
1267	128	Petroleum crude oil
1268	128	Petroleum distillates, n.o.s.
1268	128	Petroleum products, n.o.s.
1270	128	Oil, petroleum
1270	128	Petroleum oil
1272	129	Pine oil
1274	129	n-Propanol
1274	129	Propyl alcohol, normal
1275	129	Propionaldehyde
1276	129	n-Propyl acetate
1277	132	Propylamine
1278	129	1-Chloropropane
1278	129	Propyl chloride
1279	130	1,2-Dichloropropane
1280	127P	Propylene oxide
1281	129	Propyl formates
1282	129	Pyridine
1286	127	Rosin oil
1287	127	Rubber solution
1288	128	Shale oil
1289	132	Sodium methylate, solution in alcohol
1292	129	Ethyl silicate
1292	129	Tetraethyl silicate
1293	127	Tinctures, medicinal
1294	130	Toluene
1295	139	Trichlorosilane
1296	132	Triethylamine
1297	132	Trimethylamine, aqueous solution
1298	155	Trimethylchlorosilane
1299	128	Turpentine
1300	128	Turpentine substitute
1301	129P	Vinyl acetate, stabilized

ID No.	Guide No.	Name of Material
1302	**127P**	Vinyl ethyl ether, stabilized
1303	**130P**	Vinylidene chloride, stabilized
1304	**127P**	Vinyl isobutyl ether, stabilized
1305	**155P**	Vinyltrichlorosilane
1305	**155P**	Vinyltrichlorosilane, stabilized
1306	**129**	Wood preservatives, liquid
1307	**130**	Xylenes
1308	**170**	Zirconium suspended in a flammable liquid
1308	**170**	Zirconium suspended in a liquid (flammable)
1309	**170**	Aluminum powder, coated
1310	**113**	Ammonium picrate, wetted with not less than 10% water
1312	**133**	Borneol
1313	**133**	Calcium resinate
1314	**133**	Calcium resinate, fused
1318	**133**	Cobalt resinate, precipitated
1320	**113**	Dinitrophenol, wetted with not less than 15% water
1321	**113**	Dinitrophenolates, wetted with not less than 15% water
1322	**113**	Dinitroresorcinol, wetted with not less than 15% water
1323	**170**	Ferrocerium
1324	**133**	Films, nitrocellulose base
1325	**133**	Flammable solid, organic, n.o.s.
1325	**133**	Fusee (rail or highway)
1326	**170**	Hafnium powder, wetted with not less than 25% water
1327	**133**	Bhusa, wet, damp or contaminated with oil
1327	**133**	Hay, wet, damp or contaminated with oil

ID No.	Guide No.	Name of Material
1327	**133**	Straw, wet, damp or contaminated with oil
1328	**133**	Hexamethylenetetramine
1330	**133**	Manganese resinate
1331	**133**	Matches, “strike anywhere”
1332	**133**	Metaldehyde
1333	**170**	Cerium, slabs, ingots or rods
1334	**133**	Naphthalene, crude
1334	**133**	Naphthalene, refined
1336	**113**	Nitroguanidine, wetted with not less than 20% water
1336	**113**	Picrite, wetted with not less than 20% water
1337	**113**	Nitrostarch, wetted with not less than 20% water
1338	**133**	Phosphorus, amorphous
1338	**133**	Red phosphorus
1339	**139**	Phosphorus heptasulfide, free from yellow and white Phosphorus
1339	**139**	Phosphorus heptasulphide, free from yellow and white Phosphorus
1340	**139**	Phosphorus pentasulfide, free from yellow and white Phosphorus
1340	**139**	Phosphorus pentasulphide, free from yellow and white Phosphorus
1341	**139**	Phosphorus sesquisulfide, free from yellow and white Phosphorus
1341	**139**	Phosphorus sesquisulphide, free from yellow and white Phosphorus
1343	**139**	Phosphorus trisulfide, free from yellow and white Phosphorus

ID No.	Guide No.	Name of Material
1343	**139**	Phosphorus trisulphide, free from yellow and white Phosphorus
1344	**113**	Picric acid, wetted with not less than 30% water
1344	**113**	Trinitrophenol, wetted with not less than 30% water
1345	**133**	Rubber scrap, powdered or granulated
1345	**133**	Rubber shoddy, powdered or granulated
1346	**170**	Silicon powder, amorphous
1347	**113**	Silver picrate, wetted with not less than 30% water
1348	**113**	Sodium dinitro-o-cresolate, wetted with not less than 15% water
1349	**113**	Sodium picramate, wetted with not less than 20% water
1350	**133**	Sulfur
1350	**133**	Sulphur
1352	**170**	Titanium powder, wetted with not less than 25% water
1353	**133**	Fabrics impregnated with weakly nitrated Nitrocellulose, n.o.s.
1353	**133**	Fibers impregnated with weakly nitrated Nitrocellulose, n.o.s.
1353	**133**	Fibres impregnated with weakly nitrated Nitrocellulose, n.o.s.
1354	**113**	Trinitrobenzene, wetted with not less than 30% water
1355	**113**	Trinitrobenzoic acid, wetted with not less than 30% water
1356	**113**	TNT, wetted with not less than 30% water
1356	**113**	Trinitrotoluene, wetted with not less than 30% water

ID No.	Guide No.	Name of Material
1357	**113**	Urea nitrate, wetted with not less than 20% water
1358	**170**	Zirconium powder, wetted with not less than 25% water
1360	**139**	Calcium phosphide
1361	**133**	Carbon, animal or vegetable origin
1361	**133**	Charcoal
1362	**133**	Carbon, activated
1363	**135**	Copra
1364	**133**	Cotton waste, oily
1365	**133**	Cotton
1365	**133**	Cotton, wet
1366	**135**	Diethylzinc
1369	**135**	p-Nitrosodimethylaniline
1370	**135**	Dimethylzinc
1372	**133**	Fibers, animal or vegetable, burnt, wet or damp
1372	**133**	Fibres, animal or vegetable, burnt, wet or damp
1373	**133**	Fabrics, animal or vegetable or synthetic, n.o.s. with oil
1373	**133**	Fibers, animal or vegetable or synthetic, n.o.s. with oil
1373	**133**	Fibres, animal or vegetable or synthetic, n.o.s. with oil
1374	**133**	Fish meal, unstabilized
1374	**133**	Fish scrap, unstabilized
1376	**135**	Iron oxide, spent
1376	**135**	Iron sponge, spent
1378	**170**	Metal catalyst, wetted
1379	**133**	Paper, unsaturated oil treated
1380	**135**	Pentaborane
1381	**136**	Phosphorus, white, dry or under water or in solution

ID No.	Guide No.	Name of Material
1381	136	Phosphorus, yellow, dry or under water or in solution
1381	136	White phosphorus, dry
1381	136	White phosphorus, in solution
1381	136	White phosphorus, under water
1381	136	Yellow phosphorus, dry
1381	136	Yellow phosphorus, in solution
1381	136	Yellow phosphorus, under water
1382	135	Potassium sulfide, anhydrous
1382	135	Potassium sulfide, with less than 30% water of crystallization
1382	135	Potassium sulphide, anhydrous
1382	135	Potassium sulphide, with less than 30% water of crystallization
1383	135	Aluminum powder, pyrophoric
1383	135	Pyrophoric alloy, n.o.s.
1383	135	Pyrophoric metal, n.o.s.
1384	135	Sodium dithionite
1384	135	Sodium hydrosulfite
1384	135	Sodium hydrosulphite
1385	135	Sodium sulfide, anhydrous
1385	135	Sodium sulfide, with less than 30% water of crystallization
1385	135	Sodium sulphide, anhydrous
1385	135	Sodium sulphide, with less than 30% water of crystallization
1386	135	Seed cake, with more than 1.5% oil and not more than 11% moisture
1387	133	Wool waste, wet
1389	138	Alkali metal amalgam
1389	138	Alkali metal amalgam, liquid
1390	139	Alkali metal amides

ID No.	Guide No.	Name of Material
1391	138	Alkali metal dispersion
1391	138	Alkaline earth metal dispersion
1392	138	Alkaline earth metal amalgam
1392	138	Alkaline earth metal amalgam, liquid
1393	138	Alkaline earth metal alloy, n.o.s.
1394	138	Aluminum carbide
1395	139	Aluminum ferrosilicon powder
1396	138	Aluminum powder, uncoated
1397	139	Aluminum phosphide
1398	138	Aluminum silicon powder, uncoated
1400	138	Barium
1401	138	Calcium
1402	138	Calcium carbide
1403	138	Calcium cyanamide, with more than 0.1% Calcium carbide
1404	138	Calcium hydride
1405	138	Calcium silicide
1407	138	Caesium
1407	138	Cesium
1408	139	Ferrosilicon
1409	138	Metal hydrides, water-reactive, n.o.s.
1410	138	Lithium aluminum hydride
1411	138	Lithium aluminum hydride, ethereal
1413	138	Lithium borohydride
1414	138	Lithium hydride
1415	138	Lithium
1417	138	Lithium silicon
1418	138	Magnesium alloys powder
1418	138	Magnesium powder

ID No.	Guide No.	Name of Material
1419	139	Magnesium aluminum phosphide
1420	138	Potassium, metal alloys
1420	138	Potassium, metal alloys, liquid
1421	138	Alkali metal alloy, liquid, n.o.s.
1422	138	Potassium sodium alloys
1422	138	Potassium sodium alloys, liquid
1422	138	Sodium potassium alloys
1422	138	Sodium potassium alloys, liquid
1423	138	Rubidium
1423	138	Rubidium metal
1426	138	Sodium borohydride
1427	138	Sodium hydride
1428	138	Sodium
1431	138	Sodium methylate
1431	138	Sodium methylate, dry
1432	139	Sodium phosphide
1433	139	Stannic phosphides
1435	138	Zinc ashes
1435	138	Zinc dross
1435	138	Zinc residue
1435	138	Zinc skimmings
1436	138	Zinc dust
1436	138	Zinc powder
1437	138	Zirconium hydride
1438	140	Aluminum nitrate
1439	141	Ammonium dichromate
1442	143	Ammonium perchlorate
1444	140	Ammonium persulfate
1444	140	Ammonium persulphate
1445	141	Barium chlorate

ID No.	Guide No.	Name of Material
1445	141	Barium chlorate, solid
1446	141	Barium nitrate
1447	141	Barium perchlorate
1447	141	Barium perchlorate, solid
1448	141	Barium permanganate
1449	141	Barium peroxide
1450	141	Bromates, inorganic, n.o.s.
1451	140	Caesium nitrate
1451	140	Cesium nitrate
1452	140	Calcium chlorate
1453	140	Calcium chlorite
1454	140	Calcium nitrate
1455	140	Calcium perchlorate
1456	140	Calcium permanganate
1457	140	Calcium peroxide
1458	140	Borate and Chlorate mixture
1458	140	Chlorate and Borate mixture
1459	140	Chlorate and Magnesium chloride mixture
1459	140	Chlorate and Magnesium chloride mixture, solid
1459	140	Magnesium chloride and Chlorate mixture
1459	140	Magnesium chloride and Chlorate mixture, solid
1461	140	Chlorates, inorganic, n.o.s.
1462	143	Chlorites, inorganic, n.o.s.
1463	141	Chromium trioxide, anhydrous
1465	140	Didymium nitrate
1466	140	Ferric nitrate
1467	143	Guanidine nitrate
1469	141	Lead nitrate
1470	141	Lead perchlorate

ID No.	Guide No.	Name of Material
1470	141	Lead perchlorate, solid
1471	140	Lithium hypochlorite, dry
1471	140	Lithium hypochlorite mixture
1471	140	Lithium hypochlorite mixtures, dry
1472	143	Lithium peroxide
1473	140	Magnesium bromate
1474	140	Magnesium nitrate
1475	140	Magnesium perchlorate
1476	140	Magnesium peroxide
1477	140	Nitrates, inorganic, n.o.s.
1479	140	Oxidizing solid, n.o.s.
1481	140	Perchlorates, inorganic, n.o.s.
1482	140	Permanganates, inorganic, n.o.s.
1483	140	Peroxides, inorganic, n.o.s.
1484	140	Potassium bromate
1485	140	Potassium chlorate
1486	140	Potassium nitrate
1487	140	Potassium nitrate and Sodium nitrite mixture
1487	140	Sodium nitrite and Potassium nitrate mixture
1488	140	Potassium nitrite
1489	140	Potassium perchlorate
1490	140	Potassium permanganate
1491	144	Potassium peroxide
1492	140	Potassium persulfate
1492	140	Potassium persulphate
1493	140	Silver nitrate
1494	141	Sodium bromate
1495	140	Sodium chlorate
1496	143	Sodium chlorite
1498	140	Sodium nitrate
1499	140	Potassium nitrate and Sodium nitrate mixture
1499	140	Sodium nitrate and Potassium nitrate mixture
1500	140	Sodium nitrite
1502	140	Sodium perchlorate
1503	140	Sodium permanganate
1504	144	Sodium peroxide
1505	140	Sodium persulfate
1505	140	Sodium persulphate
1506	143	Strontium chlorate
1507	140	Strontium nitrate
1508	140	Strontium perchlorate
1509	143	Strontium peroxide
1510	143	Tetranitromethane
1511	140	Urea hydrogen peroxide
1512	140	Zinc ammonium nitrite
1513	140	Zinc chlorate
1514	140	Zinc nitrate
1515	140	Zinc permanganate
1516	143	Zinc peroxide
1517	113	Zirconium picramate, wetted with not less than 20% water
1541	155	Acetone cyanohydrin, stabilized
1544	151	Alkaloids, solid, n.o.s. (poisonous)
1544	151	Alkaloid salts, solid, n.o.s. (poisonous)
1545	155	Allyl isothiocyanate, stabilized
1546	151	Ammonium arsenate
1547	153	Aniline
1548	153	Aniline hydrochloride

ID No.	Guide No.	Name of Material
1549	157	Antimony compound, inorganic, solid, n.o.s.
1550	151	Antimony lactate
1551	151	Antimony potassium tartrate
1553	154	Arsenic acid, liquid
1554	154	Arsenic acid, solid
1555	151	Arsenic bromide
1556	152	Arsenic compound, liquid, n.o.s.
1556	152	Arsenic compound, liquid, n.o.s., inorganic
1556	152	MD
1556	152	Methyldichloroarsine
1556	152	PD
1557	152	Arsenic compound, solid, n.o.s.
1557	152	Arsenic compound, solid, n.o.s., inorganic
1558	152	Arsenic
1559	151	Arsenic pentoxide
1560	157	Arsenic chloride
1560	157	Arsenic trichloride
1561	151	Arsenic trioxide
1562	152	Arsenical dust
1564	154	Barium compound, n.o.s.
1565	157	Barium cyanide
1566	154	Beryllium compound, n.o.s.
1567	134	Beryllium powder
1569	131	Bromoacetone
1570	152	Brucine
1571	113	Barium azide, wetted with not less than 50% water
1572	151	Cacodylic acid
1573	151	Calcium arsenate
1574	151	Calcium arsenate and Calcium arsenite mixture, solid
1574	151	Calcium arsenite and Calcium arsenate mixture, solid
1575	157	Calcium cyanide
1577	153	Chlorodinitrobenzenes, liquid
1577	153	Chlorodinitrobenzenes, solid
1577	153	Dinitrochlorobenzenes
1578	152	Chloronitrobenzenes
1578	152	Chloronitrobenzenes, solid
1579	153	4-Chloro-o-toluidine hydrochloride
1579	153	4-Chloro-o-toluidine hydrochloride, solid
1580	154	Chloropicrin
1581	123	Chloropicrin and Methyl bromide mixture
1581	123	Methyl bromide and Chloropicrin mixture
1582	119	Chloropicrin and Methyl chloride mixture
1582	119	Methyl chloride and Chloropicrin mixture
1583	154	Chloropicrin mixture, n.o.s.
1585	151	Copper acetoarsenite
1586	151	Copper arsenite
1587	151	Copper cyanide
1588	157	Cyanides, inorganic, solid, n.o.s.
1589	125	CK
1589	125	Cyanogen chloride, stabilized
1590	153	Dichloroanilines, liquid
1590	153	Dichloroanilines, solid
1591	152	o-Dichlorobenzene
1593	160	Dichloromethane

ID No.	Guide No.	Name of Material
1593	160	Methylene chloride
1594	152	Diethyl sulfate
1594	152	Diethyl sulphate
1595	156	Dimethyl sulfate
1595	156	Dimethyl sulphate
1596	153	Dinitroanilines
1597	152	Dinitrobenzenes, liquid
1597	152	Dinitrobenzenes, solid
1598	153	Dinitro-o-cresol
1599	153	Dinitrophenol, solution
1600	152	Dinitrotoluenes, molten
1601	151	Disinfectant, solid, poisonous, n.o.s.
1601	151	Disinfectant, solid, toxic, n.o.s.
1602	151	Dye, liquid, poisonous, n.o.s.
1602	151	Dye, liquid, toxic, n.o.s.
1602	151	Dye intermediate, liquid, poisonous, n.o.s.
1602	151	Dye intermediate, liquid, toxic, n.o.s.
1603	155	Ethyl bromoacetate
1604	132	Ethylenediamine
1605	154	Ethylene dibromide
1606	151	Ferric arsenate
1607	151	Ferric arsenite
1608	151	Ferrous arsenate
1611	151	Hexaethyl tetraphosphate
1612	123	Compressed gas and hexaethyl tetraphosphate mixture
1612	123	Hexaethyl tetraphosphate and compressed gas mixture
1613	154	Hydrocyanic acid, aqueous solution, with less than 5% Hydrogen cyanide
1613	154	Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide
1613	154	Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide
1614	152	Hydrogen cyanide, stabilized (absorbed)
1616	151	Lead acetate
1617	151	Lead arsenates
1618	151	Lead arsenites
1620	151	Lead cyanide
1621	151	London purple
1622	151	Magnesium arsenate
1623	151	Mercuric arsenate
1624	154	Mercuric chloride
1625	141	Mercuric nitrate
1626	157	Mercuric potassium cyanide
1627	141	Mercurous nitrate
1629	151	Mercury acetate
1630	151	Mercury ammonium chloride
1631	154	Mercury benzoate
1634	154	Mercuric bromide
1634	154	Mercurous bromide
1634	154	Mercury bromides
1636	154	Mercuric cyanide
1636	154	Mercury cyanide
1637	151	Mercury gluconate
1638	151	Mercury iodide
1639	151	Mercury nucleate
1640	151	Mercury oleate
1641	151	Mercury oxide
1642	151	Mercuric oxycyanide

ID No.	Guide No.	Name of Material
1642	151	Mercury oxycyanide, desensitized
1643	151	Mercury potassium iodide
1644	151	Mercury salicylate
1645	151	Mercuric sulfate
1645	151	Mercuric sulphate
1645	151	Mercury sulfate
1645	151	Mercury sulphate
1646	151	Mercury thiocyanate
1647	151	Ethylene dibromide and Methyl bromide mixture, liquid
1647	151	Methyl bromide and Ethylene dibromide mixture, liquid
1648	127	Acetonitrile
1649	131	Motor fuel anti-knock mixture
1650	153	beta-Naphthylamine
1650	153	beta-Naphthylamine, solid
1650	153	Naphthylamine (beta)
1650	153	Naphthylamine (beta), solid
1651	153	Naphthylthiourea
1652	153	Naphthylurea
1653	151	Nickel cyanide
1654	151	Nicotine
1655	151	Nicotine compound, solid, n.o.s.
1655	151	Nicotine preparation, solid, n.o.s.
1656	151	Nicotine hydrochloride
1656	151	Nicotine hydrochloride, liquid
1656	151	Nicotine hydrochloride, solution
1657	151	Nicotine salicylate
1658	151	Nicotine sulfate, solid
1658	151	Nicotine sulfate, solution
1658	151	Nicotine sulphate, solid
1658	151	Nicotine sulphate, solution
1659	151	Nicotine tartrate
1660	124	Nitric oxide
1660	124	Nitric oxide, compressed
1661	153	Nitroanilines
1662	152	Nitrobenzene
1663	153	Nitrophenols
1664	152	Nitrotoluenes, liquid
1664	152	Nitrotoluenes, solid
1665	152	Nitroxylenes, liquid
1665	152	Nitroxylenes, solid
1669	151	Pentachloroethane
1670	157	Perchloromethyl mercaptan
1671	153	Phenol, solid
1672	151	Phenylcarbylamine chloride
1673	153	Phenylenediamines
1674	151	Phenylmercuric acetate
1677	151	Potassium arsenate
1678	154	Potassium arsenite
1679	157	Potassium cuprocyanide
1680	157	Potassium cyanide
1680	157	Potassium cyanide, solid
1683	151	Silver arsenite
1684	151	Silver cyanide
1685	151	Sodium arsenate
1686	154	Sodium arsenite, aqueous solution
1687	153	Sodium azide
1688	152	Sodium cacodylate
1689	157	Sodium cyanide

ID No.	Guide No.	Name of Material
1689	157	Sodium cyanide, solid
1690	154	Sodium fluoride
1690	154	Sodium fluoride, solid
1691	151	Strontium arsenite
1692	151	Strychnine
1692	151	Strychnine salts
1693	159	Tear gas devices
1693	159	Tear gas substance, liquid, n.o.s.
1693	159	Tear gas substance, solid, n.o.s.
1694	159	Bromobenzyl cyanides, liquid
1694	159	Bromobenzyl cyanides, solid
1694	159	CA
1695	131	Chloroacetone, stabilized
1697	153	Chloroacetophenone
1697	153	Chloroacetophenone, solid
1697	153	CN
1698	154	Adamsite
1698	154	Diphenylamine chloroarsine
1698	154	DM
1699	151	DA
1699	151	Diphenylchloroarsine, liquid
1699	151	Diphenylchloroarsine, solid
1700	159	Tear gas candles
1700	159	Tear gas grenades
1701	152	Xylyl bromide
1701	152	Xylyl bromide, liquid
1702	151	1,1,2,2-Tetrachloroethane
1702	151	Tetrachloroethane
1704	153	Tetraethyl dithiopyrophosphate
1707	151	Thallium compound, n.o.s.

ID No.	Guide No.	Name of Material
1708	153	Toluidines, liquid
1708	153	Toluidines, solid
1709	151	2,4-Toluenediamine, solid
1709	151	2,4-Toluylenediamine
1709	151	2,4-Toluylenediamine, solid
1710	160	Trichloroethylene
1711	153	Xylidines, liquid
1711	153	Xylidines, solid
1712	151	Zinc arsenate
1712	151	Zinc arsenate and Zinc arsenite mixture
1712	151	Zinc arsenite
1712	151	Zinc arsenite and Zinc arsenate mixture
1713	151	Zinc cyanide
1714	139	Zinc phosphide
1715	137	Acetic anhydride
1716	156	Acetyl bromide
1717	155	Acetyl chloride
1718	153	Acid butyl phosphate
1718	153	Butyl acid phosphate
1719	154	Caustic alkali liquid, n.o.s.
1722	155	Allyl chlorocarbonate
1722	155	Allyl chloroformate
1723	132	Allyl iodide
1724	155	Allyltrichlorosilane, stabilized
1725	137	Aluminum bromide, anhydrous
1726	137	Aluminum chloride, anhydrous
1727	154	Ammonium bifluoride, solid
1727	154	Ammonium hydrogendifluoride, solid
1728	155	Amyltrichlorosilane

ID No.	Guide No.	Name of Material
1729	**156**	Anisoyl chloride
1730	**157**	Antimony pentachloride, liquid
1731	**157**	Antimony pentachloride, solution
1732	**157**	Antimony pentafluoride
1733	**157**	Antimony trichloride
1733	**157**	Antimony trichloride, liquid
1733	**157**	Antimony trichloride, solid
1736	**137**	Benzoyl chloride
1737	**156**	Benzyl bromide
1738	**156**	Benzyl chloride
1739	**137**	Benzyl chloroformate
1740	**154**	Hydrogendifluorides, n.o.s.
1740	**154**	Hydrogendifluorides, solid, n.o.s.
1741	**125**	Boron trichloride
1742	**157**	Boron trifluoride acetic acid complex
1742	**157**	Boron trifluoride acetic acid complex, liquid
1743	**157**	Boron trifluoride propionic acid complex
1743	**157**	Boron trifluoride propionic acid complex, liquid
1744	**154**	Bromine
1744	**154**	Bromine, solution
1744	**154**	Bromine, solution (Inhalation Hazard Zone A)
1744	**154**	Bromine, solution (Inhalation Hazard Zone B)
1745	**144**	Bromine pentafluoride
1746	**144**	Bromine trifluoride
1747	**155**	Butyltrichlorosilane
1748	**140**	Calcium hypochlorite, dry

ID No.	Guide No.	Name of Material
1748	**140**	Calcium hypochlorite mixture, dry, with more than 39% available Chlorine (8.8% available Oxygen)
1749	**124**	Chlorine trifluoride
1750	**153**	Chloroacetic acid, solution
1751	**153**	Chloroacetic acid, solid
1752	**156**	Chloroacetyl chloride
1753	**156**	Chlorophenyltrichlorosilane
1754	**137**	Chlorosulfonic acid (with or without sulfur trioxide mixture)
1754	**137**	Chlorosulphonic acid (with or without sulphur trioxide mixture)
1755	**154**	Chromic acid, solution
1756	**154**	Chromic fluoride, solid
1757	**154**	Chromic fluoride, solution
1758	**137**	Chromium oxychloride
1759	**154**	Corrosive solid, n.o.s.
1759	**154**	Ferrous chloride, solid
1760	**154**	Chemical kit
1760	**154**	Compounds, cleaning liquid (corrosive)
1760	**154**	Compounds, tree or weed killing, liquid (corrosive)
1760	**154**	Corrosive liquid, n.o.s.
1760	**154**	Ferrous chloride, solution
1761	**154**	Cupriethylenediamine, solution
1762	**156**	Cyclohexenyltrichlorosilane
1763	**156**	Cyclohexyltrichlorosilane
1764	**153**	Dichloroacetic acid
1765	**156**	Dichloroacetyl chloride
1766	**156**	Dichlorophenyltrichlorosilane
1767	**155**	Diethyldichlorosilane

ID No.	Guide No.	Name of Material
1768	154	Difluorophosphoric acid, anhydrous
1769	156	Diphenyldichlorosilane
1770	153	Diphenylmethyl bromide
1771	156	Dodecyltrichlorosilane
1773	157	Ferric chloride, anhydrous
1774	154	Fire extinguisher charges, corrosive liquid
1775	154	Fluoroboric acid
1776	154	Fluorophosphoric acid, anhydrous
1777	137	Fluorosulfonic acid
1777	137	Fluorosulphonic acid
1778	154	Fluorosilicic acid
1778	154	Hydrofluorosilicic acid
1779	153	Formic acid
1779	153	Formic acid, with more than 85% acid
1780	156	Fumaryl chloride
1781	156	Hexadecyltrichlorosilane
1782	154	Hexafluorophosphoric acid
1783	153	Hexamethylenediamine, solution
1784	156	Hexyltrichlorosilane
1786	157	Hydrofluoric acid and Sulfuric acid mixture
1786	157	Hydrofluoric acid and Sulphuric acid mixture
1786	157	Sulfuric acid and Hydrofluoric acid mixture
1786	157	Sulphuric acid and Hydrofluoric acid mixture
1787	154	Hydriodic acid
1788	154	Hydrobromic acid
1789	157	Hydrochloric acid
1789	157	Muriatic acid
1790	157	Hydrofluoric acid
1791	154	Hypochlorite solution
1791	154	Sodium hypochlorite
1792	157	Iodine monochloride, solid
1793	153	Isopropyl acid phosphate
1794	154	Lead sulfate, with more than 3% free acid
1794	154	Lead sulphate, with more than 3% free acid
1796	157	Nitrating acid mixture with more than 50% nitric acid
1796	157	Nitrating acid mixture with not more than 50% nitric acid
1798	157	Aqua regia
1798	157	Nitrohydrochloric acid
1799	156	Nonyltrichlorosilane
1800	156	Octadecyltrichlorosilane
1801	156	Octyltrichlorosilane
1802	140	Perchloric acid, with not more than 50% acid
1803	153	Phenolsulfonic acid, liquid
1803	153	Phenolsulphonic acid, liquid
1804	156	Phenyltrichlorosilane
1805	154	Phosphoric acid, liquid
1805	154	Phosphoric acid, solid
1805	154	Phosphoric acid, solution
1806	137	Phosphorus pentachloride
1807	137	Phosphorus pentoxide
1808	137	Phosphorus tribromide
1809	137	Phosphorus trichloride
1810	137	Phosphorus oxychloride
1811	154	Potassium hydrogendifluoride

ID No.	Guide No.	Name of Material
1811	154	Potassium hydrogen difluoride, solid
1812	154	Potassium fluoride
1812	154	Potassium fluoride, solid
1813	154	Caustic potash, solid
1813	154	Potassium hydroxide, solid
1814	154	Caustic potash, solution
1814	154	Potassium hydroxide, solution
1815	132	Propionyl chloride
1816	155	Propyltrichlorosilane
1817	137	Pyrosulfuryl chloride
1817	137	Pyrosulphuryl chloride
1818	157	Silicon tetrachloride
1819	154	Sodium aluminate, solution
1823	154	Caustic soda, solid
1823	154	Sodium hydroxide, solid
1824	154	Caustic soda, solution
1824	154	Sodium hydroxide, solution
1825	157	Sodium monoxide
1826	157	Nitrating acid mixture, spent, with more than 50% nitric acid
1826	157	Nitrating acid mixture, spent, with not more than 50% nitric acid
1827	137	Stannic chloride, anhydrous
1827	137	Tin tetrachloride
1828	137	Sulfur chlorides
1828	137	Sulphur chlorides
1829	137	Sulfur trioxide, stabilized
1829	137	Sulphur trioxide, stabilized
1830	137	Sulfuric acid
1830	137	Sulfuric acid, with more than 51% acid
1830	137	Sulphuric acid
1830	137	Sulphuric acid, with more than 51% acid
1831	137	Sulfuric acid, fuming
1831	137	Sulfuric acid, fuming, with less than 30% free Sulfur trioxide
1831	137	Sulfuric acid, fuming, with not less than 30% free Sulfur trioxide
1831	137	Sulphuric acid, fuming
1831	137	Sulphuric acid, fuming, with less than 30% free Sulphur trioxide
1831	137	Sulphuric acid, fuming, with not less than 30% free Sulphur trioxide
1832	137	Sulfuric acid, spent
1832	137	Sulphuric acid, spent
1833	154	Sulfurous acid
1833	154	Sulphurous acid
1834	137	Sulfuryl chloride
1834	137	Sulphuryl chloride
1835	153	Tetramethylammonium hydroxide
1835	153	Tetramethylammonium hydroxide, solution
1836	137	Thionyl chloride
1837	157	Thiophosphoryl chloride
1838	137	Titanium tetrachloride
1839	153	Trichloroacetic acid
1840	154	Zinc chloride, solution
1841	171	Acetaldehyde ammonia
1843	141	Ammonium dinitro-o-cresolate
1843	141	Ammonium dinitro-o-cresolate, solid
1845	120	Carbon dioxide, solid
1845	120	Dry ice

ID No.	Guide No.	Name of Material
1846	151	Carbon tetrachloride
1847	153	Potassium sulfide, hydrated, with not less than 30% water of crystallization
1847	153	Potassium sulphide, hydrated, with not less than 30% water of crystallization
1848	132	Propionic acid
1848	132	Propionic acid, with not less than 10% and less than 90% acid
1849	153	Sodium sulfide, hydrated, with not less than 30% water
1849	153	Sodium sulphide, hydrated, with not less than 30% water
1851	151	Medicine, liquid, poisonous, n.o.s.
1851	151	Medicine, liquid, toxic, n.o.s.
1854	135	Barium alloys, pyrophoric
1855	135	Calcium, pyrophoric
1855	135	Calcium alloys, pyrophoric
1856	133	Rags, oily
1857	133	Textile waste, wet
1858	126	Hexafluoropropylene
1858	126	Hexafluoropropylene, compressed
1858	126	Refrigerant gas R-1216
1859	125	Silicon tetrafluoride
1859	125	Silicon tetrafluoride, compressed
1860	116P	Vinyl fluoride, stabilized
1862	130	Ethyl crotonate
1863	128	Fuel, aviation, turbine engine
1865	131	n-Propyl nitrate
1866	127	Resin solution
1868	134	Decaborane
1869	138	Magnesium
1869	138	Magnesium, in pellets, turnings or ribbons
1869	138	Magnesium alloys, with more than 50% Magnesium, in pellets, turnings or ribbons
1870	138	Potassium borohydride
1871	170	Titanium hydride
1872	141	Lead dioxide
1873	143	Perchloric acid, with more than 50% but not more than 72% acid
1884	157	Barium oxide
1885	153	Benzidine
1886	156	Benzylidene chloride
1887	160	Bromochloromethane
1888	151	Chloroform
1889	157	Cyanogen bromide
1891	131	Ethyl bromide
1892	151	ED
1892	151	Ethyldichloroarsine
1894	151	Phenylmercuric hydroxide
1895	151	Phenylmercuric nitrate
1897	160	Perchloroethylene
1897	160	Tetrachloroethylene
1898	156	Acetyl iodide
1902	153	Diisooctyl acid phosphate
1903	153	Disinfectant, liquid, corrosive, n.o.s.
1905	154	Selenic acid
1906	153	Acid, sludge
1906	153	Sludge acid
1907	154	Soda lime, with more than 4% Sodium hydroxide

ID No.	Guide No.	Name of Material
1908	**154**	Chlorite solution
1910	**157**	Calcium oxide
1911	**119**	Diborane
1911	**119**	Diborane, compressed
1911	**119**	Diborane mixtures
1912	**115**	Methyl chloride and Methylene chloride mixture
1912	**115**	Methylene chloride and Methyl chloride mixture
1913	**120**	Neon, refrigerated liquid (cryogenic liquid)
1914	**130**	Butyl propionates
1915	**127**	Cyclohexanone
1916	**152**	2,2'-Dichlorodiethyl ether
1916	**152**	Dichloroethyl ether
1917	**129P**	Ethyl acrylate, stabilized
1918	**130**	Cumene
1918	**130**	Isopropylbenzene
1919	**129P**	Methyl acrylate, stabilized
1920	**128**	Nonanes
1921	**131P**	Propyleneimine, stabilized
1922	**132**	Pyrrolidine
1923	**135**	Calcium dithionite
1923	**135**	Calcium hydrosulfite
1923	**135**	Calcium hydrosulphite
1928	**135**	Methyl magnesium bromide in Ethyl ether
1929	**135**	Potassium dithionite
1929	**135**	Potassium hydrosulfite
1929	**135**	Potassium hydrosulphite
1931	**171**	Zinc dithionite
1931	**171**	Zinc hydrosulfite
1931	**171**	Zinc hydrosulphite

ID No.	Guide No.	Name of Material
1932	**135**	Zirconium scrap
1935	**157**	Cyanide solution, n.o.s.
1938	**156**	Bromoacetic acid
1938	**156**	Bromoacetic acid, solution
1939	**137**	Phosphorus oxybromide
1939	**137**	Phosphorus oxybromide, solid
1940	**153**	Thioglycolic acid
1941	**171**	Dibromodifluoromethane
1941	**171**	Refrigerant gas R-12B2
1942	**140**	Ammonium nitrate, with not more than 0.2% combustible substances
1944	**133**	Matches, safety
1945	**133**	Matches, wax “vesta”
1950	**126**	Aerosols
1951	**120**	Argon, refrigerated liquid (cryogenic liquid)
1952	**126**	Carbon dioxide and Ethylene oxide mixtures, with not more than 9% Ethylene oxide
1952	**126**	Ethylene oxide and Carbon dioxide mixtures, with not more than 9% Ethylene oxide
1953	**119**	Compressed gas, poisonous, flammable, n.o.s.
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)

ID No.	Guide No.	Name of Material
1953	119	Compressed gas, toxic, flammable, n.o.s.
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)
1954	115	Compressed gas, flammable, n.o.s.
1954	115	Dispersant gases, n.o.s. (flammable)
1954	115	Refrigerant gases, n.o.s. (flammable)
1955	123	Compressed gas, poisonous, n.o.s.
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone B)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone D)
1955	123	Compressed gas, toxic, n.o.s.
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone C)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)
1955	123	Organic phosphate compound mixed with compressed gas
1955	123	Organic phosphate mixed with compressed gas
1955	123	Organic phosphorus compound mixed with compressed gas
1956	126	Compressed gas, n.o.s.
1957	115	Deuterium
1957	115	Deuterium, compressed
1958	126	1,2-Dichloro-1,1,2,2-tetrafluoroethane
1958	126	Refrigerant gas R-114
1959	116P	1,1-Difluoroethylene
1959	116P	Refrigerant gas R-1132a
1961	115	Ethane, refrigerated liquid
1961	115	Ethane-Propane mixture, refrigerated liquid
1961	115	Propane-Ethane mixture, refrigerated liquid
1962	116P	Ethylene
1962	116P	Ethylene, compressed
1963	120	Helium, refrigerated liquid (cryogenic liquid)
1964	115	Hydrocarbon gas mixture, compressed, n.o.s.
1965	115	Hydrocarbon gas mixture, liquefied, n.o.s.
1966	115	Hydrogen, refrigerated liquid (cryogenic liquid)
1967	123	Insecticide gas, poisonous, n.o.s.
1967	123	Insecticide gas, toxic, n.o.s.
1967	123	Parathion and compressed gas mixture

ID No.	Guide No.	Name of Material
1968	**126**	Insecticide gas, n.o.s.
1969	**115**	Isobutane
1970	**120**	Krypton, refrigerated liquid (cryogenic liquid)
1971	**115**	Methane
1971	**115**	Methane, compressed
1971	**115**	Natural gas, compressed
1972	**115**	Liquefied natural gas (cryogenic liquid)
1972	**115**	LNG (cryogenic liquid)
1972	**115**	Methane, refrigerated liquid (cryogenic liquid)
1972	**115**	Natural gas, refrigerated liquid (cryogenic liquid)
1973	**126**	Chlorodifluoromethane and Chloropentafluoroethane mixture
1973	**126**	Chloropentafluoroethane and Chlorodifluoromethane mixture
1973	**126**	Refrigerant gas R-502
1974	**126**	Chlorodifluorobromomethane
1974	**126**	Refrigerant gas R-12B1
1975	**124**	Dinitrogen tetroxide and Nitric oxide mixture
1975	**124**	Nitric oxide and Dinitrogen tetroxide mixture
1975	**124**	Nitric oxide and Nitrogen dioxide mixture
1975	**124**	Nitric oxide and Nitrogen tetroxide mixture
1975	**124**	Nitrogen dioxide and Nitric oxide mixture
1975	**124**	Nitrogen tetroxide and Nitric oxide mixture
1976	**126**	Octafluorocyclobutane
1976	**126**	Refrigerant gas RC-318

ID No.	Guide No.	Name of Material
1977	**120**	Nitrogen, refrigerated liquid (cryogenic liquid)
1978	**115**	Propane
1979	**121**	Rare gases mixture, compressed
1980	**121**	Oxygen and Rare gases mixture, compressed
1980	**121**	Rare gases and Oxygen mixture, compressed
1981	**121**	Nitrogen and Rare gases mixture, compressed
1981	**121**	Rare gases and Nitrogen mixture, compressed
1982	**126**	Refrigerant gas R-14
1982	**126**	Refrigerant gas R-14, compressed
1982	**126**	Tetrafluoromethane
1982	**126**	Tetrafluoromethane, compressed
1983	**126**	1-Chloro-2,2,2-trifluoroethane
1983	**126**	Refrigerant gas R-133a
1984	**126**	Refrigerant gas R-23
1984	**126**	Trifluoromethane
1986	**131**	Alcohols, flammable, poisonous, n.o.s.
1986	**131**	Alcohols, flammable, toxic, n.o.s.
1987	**127**	Alcohols, n.o.s.
1987	**127**	Denatured alcohol
1988	**131**	Aldehydes, flammable, poisonous, n.o.s.
1988	**131**	Aldehydes, flammable, toxic, n.o.s.
1989	**129**	Aldehydes, n.o.s.
1990	**129**	Benzaldehyde
1991	**131P**	Chloroprene, stabilized

ID No.	Guide No.	Name of Material
1992	**131**	Flammable liquid, poisonous, n.o.s.
1992	**131**	Flammable liquid, toxic, n.o.s.
1993	**128**	Combustible liquid, n.o.s.
1993	**128**	Compounds, cleaning liquid (flammable)
1993	**128**	Compounds, tree or weed killing, liquid (flammable)
1993	**128**	Diesel fuel
1993	**128**	Flammable liquid, n.o.s.
1993	**128**	Fuel oil
1994	**131**	Iron pentacarbonyl
1999	**130**	Asphalt
1999	**130**	Asphalt, cut back
1999	**130**	Tars, liquid
2000	**133**	Celluloid, in blocks, rods, rolls, sheets, tubes, etc., except scrap
2001	**133**	Cobalt naphthenates, powder
2002	**135**	Celluloid, scrap
2003	**135**	Metal alkyls, water-reactive, n.o.s.
2003	**135**	Metal aryls, water-reactive, n.o.s.
2004	**135**	Magnesium diamide
2005	**135**	Magnesium diphenyl
2006	**135**	Plastics, nitrocellulose-based, self-heating, n.o.s.
2008	**135**	Zirconium powder, dry
2009	**135**	Zirconium, dry, finished sheets, strips or coiled wire
2010	**138**	Magnesium hydride
2011	**139**	Magnesium phosphide
2012	**139**	Potassium phosphide
2013	**139**	Strontium phosphide

ID No.	Guide No.	Name of Material
2014	**140**	Hydrogen peroxide, aqueous solution, with not less than 20% but not more than 60% Hydrogen peroxide (stabilized as necessary)
2015	**143**	Hydrogen peroxide, aqueous solution, stabilized, with more than 60% Hydrogen peroxide
2015	**143**	Hydrogen peroxide, stabilized
2016	**151**	Ammunition, poisonous, non-explosive
2016	**151**	Ammunition, toxic, non-explosive
2017	**159**	Ammunition, tear-producing, non-explosive
2018	**152**	Chloroanilines, solid
2019	**152**	Chloroanilines, liquid
2020	**153**	Chlorophenols, solid
2021	**153**	Chlorophenols, liquid
2022	**153**	Cresylic acid
2023	**131P**	1-Chloro-2,3-epoxypropane
2023	**131P**	Epichlorohydrin
2024	**151**	Mercury compound, liquid, n.o.s.
2025	**151**	Mercury compound, solid, n.o.s.
2026	**151**	Phenylmercuric compound, n.o.s.
2027	**151**	Sodium arsenite, solid
2028	**153**	Bombs, smoke, non-explosive, with corrosive liquid, without initiating device
2029	**132**	Hydrazine, anhydrous
2030	**153**	Hydrazine, aqueous solution, with more than 37% Hydrazine

ID No.	Guide No.	Name of Material
2030	**153**	Hydrazine, aqueous solution, with not less than 37% but not more than 64% Hydrazine
2030	**153**	Hydrazine hydrate
2031	**157**	Nitric acid, other than red fuming, with more than 70% nitric acid
2031	**157**	Nitric acid, other than red fuming, with not more than 70% nitric acid
2032	**157**	Nitric acid, red fuming
2033	**154**	Potassium monoxide
2034	**115**	Hydrogen and Methane mixture, compressed
2034	**115**	Methane and Hydrogen mixture, compressed
2035	**115**	Refrigerant gas R-143a
2035	**115**	1,1,1-Trifluoroethane
2036	**121**	Xenon
2036	**121**	Xenon, compressed
2037	**115**	Gas cartridges
2037	**115**	Receptacles, small, containing gas
2038	**152**	Dinitrotoluenes
2038	**152**	Dinitrotoluenes, liquid
2038	**152**	Dinitrotoluenes, solid
2044	**115**	2,2-Dimethylpropane
2045	**130**	Isobutyl aldehyde
2045	**130**	Isobutyraldehyde
2046	**130**	Cymenes
2047	**129**	Dichloropropenes
2048	**130**	Dicyclopentadiene
2049	**130**	Diethylbenzene
2050	**128**	Diisobutylene, isomeric compounds
2051	**132**	2-Dimethylaminoethanol
2052	**128**	Dipentene
2053	**129**	Methylamyl alcohol
2053	**129**	Methyl isobutyl carbinol
2053	**129**	M.I.B.C.
2054	**132**	Morpholine
2055	**128P**	Styrene monomer, stabilized
2056	**127**	Tetrahydrofuran
2057	**128**	Tripropylene
2058	**129**	Valeraldehyde
2059	**127**	Nitrocellulose, solution, flammable
2067	**140**	Ammonium nitrate based fertilizer
2068	**140**	Ammonium nitrate fertilizers, with Calcium carbonate
2069	**140**	Ammonium nitrate fertilizers, with Ammonium sulfate
2069	**140**	Ammonium nitrate fertilizers, with Ammonium sulphate
2070	**143**	Ammonium nitrate fertilizers, with Phosphate or Potash
2071	**140**	Ammonium nitrate based fertilizer
2072	**140**	Ammonium nitrate fertilizer, n.o.s.
2073	**125**	Ammonia, solution, with more than 35% but not more than 50% Ammonia
2074	**153P**	Acrylamide
2074	**153P**	Acrylamide, solid
2075	**153**	Chloral, anhydrous, stabilized
2076	**153**	Cresols, liquid
2076	**153**	Cresols, solid
2077	**153**	alpha-Naphthylamine
2077	**153**	Naphthylamine (alpha)

ID No.	Guide No.	Name of Material
2078	**156**	Toluene diisocyanate
2079	**154**	Diethylenetriamine
2186	**125**	Hydrogen chloride, refrigerated liquid
2187	**120**	Carbon dioxide, refrigerated liquid
2188	**119**	Arsine
2188	**119**	SA
2189	**119**	Dichlorosilane
2190	**124**	Oxygen difluoride
2190	**124**	Oxygen difluoride, compressed
2191	**123**	Sulfuryl fluoride
2191	**123**	Sulphuryl fluoride
2192	**119**	Germane
2193	**126**	Hexafluoroethane
2193	**126**	Hexafluoroethane, compressed
2193	**126**	Refrigerant gas R-116
2193	**126**	Refrigerant gas R-116, compressed
2194	**125**	Selenium hexafluoride
2195	**125**	Tellurium hexafluoride
2196	**125**	Tungsten hexafluoride
2197	**125**	Hydrogen iodide, anhydrous
2198	**125**	Phosphorus pentafluoride
2198	**125**	Phosphorus pentafluoride, compressed
2199	**119**	Phosphine
2200	**116P**	Propadiene, stabilized
2201	**122**	Nitrous oxide, refrigerated liquid
2202	**117**	Hydrogen selenide, anhydrous
2203	**116**	Silane
2203	**116**	Silane, compressed

ID No.	Guide No.	Name of Material
2204	**119**	Carbonyl sulfide
2204	**119**	Carbonyl sulphide
2205	**153**	Adiponitrile
2206	**155**	Isocyanate solution, poisonous, n.o.s.
2206	**155**	Isocyanate solution, toxic, n.o.s.
2206	**155**	Isocyanates, poisonous, n.o.s.
2206	**155**	Isocyanates, toxic, n.o.s.
2208	**140**	Bleaching powder
2208	**140**	Calcium hypochlorite mixture, dry, with more than 10% but not more than 39% available Chlorine
2209	**132**	Formaldehyde, solution (corrosive)
2209	**132**	Formalin (corrosive)
2210	**135**	Maneb
2210	**135**	Maneb preparation, with not less than 60% Maneb
2211	**133**	Polymeric beads, expandable
2211	**133**	Polystyrene beads, expandable
2212	**171**	Asbestos
2212	**171**	Asbestos, amphibole
2212	**171**	Asbestos, blue
2212	**171**	Asbestos, brown
2212	**171**	Blue asbestos
2212	**171**	Brown asbestos
2213	**133**	Paraformaldehyde
2214	**156**	Phthalic anhydride
2215	**156**	Maleic anhydride
2215	**156**	Maleic anhydride, molten
2216	**171**	Fish meal, stabilized
2216	**171**	Fish scrap, stabilized

ID No.	Guide No.	Name of Material
2217	135	Seed cake, with not more than 1.5% oil and not more than 11% moisture
2218	132P	Acrylic acid, stabilized
2219	129	Allyl glycidyl ether
2222	128	Anisole
2224	152	Benzonitrile
2225	156	Benzenesulfonyl chloride
2225	156	Benzenesulphonyl chloride
2226	156	Benzotrichloride
2227	130P	n-Butyl methacrylate, stabilized
2232	153	Chloroacetaldehyde
2232	153	2-Chloroethanal
2233	152	Chloroanisidines
2234	130	Chlorobenzotrifluorides
2235	153	Chlorobenzyl chlorides
2235	153	Chlorobenzyl chlorides, liquid
2236	156	3-Chloro-4-methylphenyl isocyanate
2236	156	3-Chloro-4-methylphenyl isocyanate, liquid
2237	153	Chloronitroanilines
2238	129	Chlorotoluenes
2239	153	Chlorotoluidines
2239	153	Chlorotoluidines, solid
2240	154	Chromosulfuric acid
2240	154	Chromosulphuric acid
2241	128	Cycloheptane
2242	128	Cycloheptene
2243	130	Cyclohexyl acetate
2244	129	Cyclopentanol
2245	128	Cyclopentanone
2246	128	Cyclopentene
2247	128	n-Decane
2248	132	Di-n-butylamine
2249	131	Dichlorodimethyl ether, symmetrical
2250	156	Dichlorophenyl isocyanates
2251	128P	Bicyclo[2.2.1]hepta-2,5-diene, stabilized
2251	128P	2,5-Norbornadiene, stabilized
2252	127	1,2-Dimethoxyethane
2253	153	N,N-Dimethylaniline
2254	133	Matches, fusee
2256	130	Cyclohexene
2257	138	Potassium
2257	138	Potassium, metal
2258	132	1,2-Propylenediamine
2259	153	Triethylenetetramine
2260	132	Tripropylamine
2261	153	Xylenols
2261	153	Xylenols, solid
2262	156	Dimethylcarbamoyl chloride
2263	128	Dimethylcyclohexanes
2264	132	N,N-Dimethylcyclohexylamine
2264	132	Dimethylcyclohexylamine
2265	129	N,N-Dimethylformamide
2266	132	Dimethyl-N-propylamine
2267	156	Dimethyl thiophosphoryl chloride
2269	153	3,3'-Iminodipropylamine
2270	132	Ethylamine, aqueous solution, with not less than 50% but not more than 70% Ethylamine
2271	128	Ethyl amyl ketone
2272	153	N-Ethylaniline

ID No.	Guide No.	Name of Material
2273	153	2-Ethylaniline
2274	153	N-Ethyl-N-benzylaniline
2275	129	2-Ethylbutanol
2276	132	2-Ethylhexylamine
2277	130P	Ethyl methacrylate
2277	130P	Ethyl methacrylate, stabilized
2278	128	n-Heptene
2279	151	Hexachlorobutadiene
2280	153	Hexamethylenediamine, solid
2281	156	Hexamethylene diisocyanate
2282	129	Hexanols
2283	130P	Isobutyl methacrylate, stabilized
2284	131	Isobutyronitrile
2285	156	Isocyanatobenzotrifluorides
2286	128	Pentamethylheptane
2287	128	Isoheptenes
2288	128	Isohexenes
2289	153	Isophoronediamine
2290	156	IPDI
2290	156	Isophorone diisocyanate
2291	151	Lead compound, soluble, n.o.s.
2293	128	4-Methoxy-4-methylpentan-2-one
2294	153	N-Methylaniline
2295	155	Methyl chloroacetate
2296	128	Methylcyclohexane
2297	128	Methylcyclohexanone
2298	128	Methylcyclopentane
2299	155	Methyl dichloroacetate
2300	153	2-Methyl-5-ethylpyridine
2301	128	2-Methylfuran
2302	127	5-Methylhexan-2-one
2303	128	Isopropenylbenzene
2304	133	Naphthalene, molten
2305	153	Nitrobenzenesulfonic acid
2305	153	Nitrobenzenesulphonic acid
2306	152	Nitrobenzotrifluorides
2306	152	Nitrobenzotrifluorides, liquid
2307	152	3-Nitro-4-chlorobenzotrifluoride
2308	157	Nitrosylsulfuric acid, liquid
2308	157	Nitrosylsulfuric acid, solid
2308	157	Nitrosylsulphuric acid, liquid
2308	157	Nitrosylsulphuric acid, solid
2309	128P	Octadiene
2310	131	Pentane-2,4-dione
2311	153	Phenetidines
2312	153	Phenol, molten
2313	129	Picolines
2315	171	Articles containing Polychlorinated biphenyls (PCB)
2315	171	PCB
2315	171	Polychlorinated biphenyls
2315	171	Polychlorinated biphenyls, liquid
2316	157	Sodium cuprocyanide, solid
2317	157	Sodium cuprocyanide, solution
2318	135	Sodium hydrosulfide, with less than 25% water of crystallization
2318	135	Sodium hydrosulphide, with less than 25% water of crystallization
2319	128	Terpene hydrocarbons, n.o.s.
2320	153	Tetraethylenepentamine

ID No.	Guide No.	Name of Material
2321	153	Trichlorobenzenes, liquid
2322	152	Trichlorobutene
2323	130	Triethyl phosphite
2324	128	Triisobutylene
2325	129	1,3,5-Trimethylbenzene
2326	153	Trimethylcyclohexylamine
2327	153	Trimethylhexamethylenediamines
2328	156	Trimethylhexamethylene diisocyanate
2329	130	Trimethyl phosphite
2330	128	Undecane
2331	154	Zinc chloride, anhydrous
2332	129	Acetaldehyde oxime
2333	131	Allyl acetate
2334	131	Allylamine
2335	131	Allyl ethyl ether
2336	131	Allyl formate
2337	131	Phenyl mercaptan
2338	127	Benzotrifluoride
2339	130	2-Bromobutane
2340	130	2-Bromoethyl ethyl ether
2341	130	1-Bromo-3-methylbutane
2342	130	Bromomethylpropanes
2343	130	2-Bromopentane
2344	129	Bromopropanes
2345	130	3-Bromopropyne
2346	127	Butanedione
2346	127	Diacetyl
2347	130	Butyl mercaptan
2348	129P	Butyl acrylates, stabilized
2350	127	Butyl methyl ether

ID No.	Guide No.	Name of Material
2351	129	Butyl nitrites
2352	127P	Butyl vinyl ether, stabilized
2353	132	Butyryl chloride
2354	131	Chloromethyl ethyl ether
2356	129	2-Chloropropane
2357	132	Cyclohexylamine
2358	128P	Cyclooctatetraene
2359	132	Diallylamine
2360	131P	Diallyl ether
2361	132	Diisobutylamine
2362	130	1,1-Dichloroethane
2363	129	Ethyl mercaptan
2364	128	n-Propyl benzene
2366	128	Diethyl carbonate
2367	130	alpha-Methylvaleraldehyde
2367	130	Methyl valeraldehyde (alpha)
2368	128	alpha-Pinene
2368	128	Pinene (alpha)
2370	128	1-Hexene
2371	128	Isopentenes
2372	129	1,2-Di-(dimethylamino)ethane
2373	127	Diethoxymethane
2374	127	3,3-Diethoxypropene
2375	129	Diethyl sulfide
2375	129	Diethyl sulphide
2376	127	2,3-Dihydropyran
2377	127	1,1-Dimethoxyethane
2378	131	2-Dimethylaminoacetonitrile
2379	132	1,3-Dimethylbutylamine
2380	127	Dimethyldiethoxysilane
2381	130	Dimethyl disulfide

ID No.	Guide No.	Name of Material
2381	130	Dimethyl disulphide
2382	131	Dimethylhydrazine, symmetrical
2383	132	Dipropylamine
2384	127	Di-n-propyl ether
2385	129	Ethyl isobutyrate
2386	132	1-Ethylpiperidine
2387	130	Fluorobenzene
2388	130	Fluorotoluenes
2389	128	Furan
2390	129	2-Iodobutane
2391	129	Iodomethylpropanes
2392	129	Iodopropanes
2393	129	Isobutyl formate
2394	129	Isobutyl propionate
2395	132	Isobutyryl chloride
2396	131P	Methacrylaldehyde, stabilized
2397	127	3-Methylbutan-2-one
2398	127	Methyl tert-butyl ether
2399	132	1-Methylpiperidine
2400	130	Methyl isovalerate
2401	132	Piperidine
2402	130	Propanethiols
2403	129P	Isopropenyl acetate
2404	131	Propionitrile
2405	129	Isopropyl butyrate
2406	127	Isopropyl isobutyrate
2407	155	Isopropyl chloroformate
2409	129	Isopropyl propionate
2410	129	1,2,3,6-Tetrahydropyridine
2411	131	Butyronitrile
2412	130	Tetrahydrothiophene
2413	128	Tetrapropyl orthotitanate
2414	130	Thiophene
2416	129	Trimethyl borate
2417	125	Carbonyl fluoride
2417	125	Carbonyl fluoride, compressed
2418	125	Sulfur tetrafluoride
2418	125	Sulphur tetrafluoride
2419	116	Bromotrifluoroethylene
2420	125	Hexafluoroacetone
2421	124	Nitrogen trioxide
2422	126	Octafluorobut-2-ene
2422	126	Refrigerant gas R-1318
2424	126	Octafluoropropane
2424	126	Refrigerant gas R-218
2426	140	Ammonium nitrate, liquid (hot concentrated solution)
2427	140	Potassium chlorate, aqueous solution
2428	140	Sodium chlorate, aqueous solution
2429	140	Calcium chlorate, aqueous solution
2430	153	Alkylphenols, solid, n.o.s. (including C2-C12 homologues)
2431	153	Anisidines
2431	153	Anisidines, liquid
2431	153	Anisidines, solid
2432	153	N,N-Diethylaniline
2433	152	Chloronitrotoluenes, liquid
2433	152	Chloronitrotoluenes, solid
2434	156	Dibenzyldichlorosilane
2435	156	Ethylphenyldichlorosilane
2436	129	Thioacetic acid

ID No.	Guide No.	Name of Material
2437	156	Methylphenyldichlorosilane
2438	132	Trimethylacetyl chloride
2439	154	Sodium hydrogendifluoride
2440	154	Stannic chloride, pentahydrate
2441	135	Titanium trichloride, pyrophoric
2441	135	Titanium trichloride mixture, pyrophoric
2442	156	Trichloroacetyl chloride
2443	137	Vanadium oxytrichloride
2444	137	Vanadium tetrachloride
2445	135	Lithium alkyls
2445	135	Lithium alkyls, liquid
2446	153	Nitrocresols
2446	153	Nitrocresols, solid
2447	136	Phosphorus, white, molten
2447	136	White phosphorus, molten
2448	133	Molten sulfur
2448	133	Molten sulphur
2448	133	Sulfur, molten
2448	133	Sulphur, molten
2451	122	Nitrogen trifluoride
2451	122	Nitrogen trifluoride, compressed
2452	116P	Ethylacetylene, stabilized
2453	115	Ethyl fluoride
2453	115	Refrigerant gas R-161
2454	115	Methyl fluoride
2454	115	Refrigerant gas R-41
2455	116	Methyl nitrite
2456	130P	2-Chloropropene
2457	128	2,3-Dimethylbutane
2458	130	Hexadiene
2459	128	2-Methyl-1-butene
2460	128	2-Methyl-2-butene
2461	128	Methylpentadiene
2463	138	Aluminum hydride
2464	141	Beryllium nitrate
2465	140	Dichloroisocyanuric acid, dry
2465	140	Dichloroisocyanuric acid salts
2465	140	Sodium dichloroisocyanurate
2465	140	Sodium dichloro-s-triazinetrione
2466	143	Potassium superoxide
2468	140	Trichloroisocyanuric acid, dry
2469	140	Zinc bromate
2470	152	Phenylacetonitrile, liquid
2471	154	Osmium tetroxide
2473	154	Sodium arsanilate
2474	157	Thiophosgene
2475	157	Vanadium trichloride
2477	131	Methyl isothiocyanate
2478	155	Isocyanate solution, flammable, poisonous, n.o.s.
2478	155	Isocyanate solution, flammable, toxic, n.o.s.
2478	155	Isocyanates, flammable, poisonous, n.o.s.
2478	155	Isocyanates, flammable, toxic, n.o.s.
2480	155	Methyl isocyanate
2481	155	Ethyl isocyanate
2482	155	n-Propyl isocyanate
2483	155	Isopropyl isocyanate
2484	155	tert-Butyl isocyanate
2485	155	n-Butyl isocyanate

ID No.	Guide No.	Name of Material
2486	155	Isobutyl isocyanate
2487	155	Phenyl isocyanate
2488	155	Cyclohexyl isocyanate
2490	153	Dichloroisopropyl ether
2491	153	Ethanolamine
2491	153	Ethanolamine, solution
2491	153	Monoethanolamine
2493	132	Hexamethyleneimine
2495	144	Iodine pentafluoride
2496	156	Propionic anhydride
2498	129	1,2,3,6-Tetrahydrobenzaldehyde
2501	152	Tris-(1-aziridinyl)phosphine oxide, solution
2502	132	Valeryl chloride
2503	137	Zirconium tetrachloride
2504	159	Acetylene tetrabromide
2504	159	Tetrabromoethane
2505	154	Ammonium fluoride
2506	154	Ammonium hydrogen sulfate
2506	154	Ammonium hydrogen sulphate
2507	154	Chloroplatinic acid, solid
2508	156	Molybdenum pentachloride
2509	154	Potassium hydrogen sulfate
2509	154	Potassium hydrogen sulphate
2511	153	2-Chloropropionic acid
2511	153	2-Chloropropionic acid, solid
2511	153	2-Chloropropionic acid, solution
2512	152	Aminophenols
2513	156	Bromoacetyl bromide
2514	130	Bromobenzene
2515	159	Bromoform
2516	151	Carbon tetrabromide
2517	115	1-Chloro-1,1-difluoroethane
2517	115	Difluorochloroethanes
2517	115	Refrigerant gas R-142b
2518	153	1,5,9-Cyclododecatriene
2520	130P	Cyclooctadienes
2521	131P	Diketene, stabilized
2522	153P	2-Dimethylaminoethyl methacrylate
2524	129	Ethyl orthoformate
2525	156	Ethyl oxalate
2526	132	Furfurylamine
2527	129P	Isobutyl acrylate, stabilized
2528	130	Isobutyl isobutyrate
2529	132	Isobutyric acid
2531	153P	Methacrylic acid, stabilized
2533	156	Methyl trichloroacetate
2534	119	Methylchlorosilane
2535	132	4-Methylmorpholine
2535	132	N-Methylmorpholine
2536	127	Methyltetrahydrofuran
2538	133	Nitronaphthalene
2541	128	Terpinolene
2542	153	Tributylamine
2545	135	Hafnium powder, dry
2546	135	Titanium powder, dry
2547	143	Sodium superoxide
2548	124	Chlorine pentafluoride
2552	151	Hexafluoroacetone hydrate
2552	151	Hexafluoroacetone hydrate, liquid
2554	130P	Methylallyl chloride

ID No.	Guide No.	Name of Material
2555	**113**	Nitrocellulose with water, not less than 25% water
2556	**113**	Nitrocellulose with alcohol
2556	**113**	Nitrocellulose with not less than 25% alcohol
2557	**133**	Nitrocellulose mixture, without pigment
2557	**133**	Nitrocellulose mixture, without plasticizer
2557	**133**	Nitrocellulose mixture, with pigment
2557	**133**	Nitrocellulose mixture, with plasticizer
2558	**131**	Epibromohydrin
2560	**129**	2-Methylpentan-2-ol
2561	**128**	3-Methyl-1-butene
2564	**153**	Trichloroacetic acid, solution
2565	**153**	Dicyclohexylamine
2567	**154**	Sodium pentachlorophenate
2570	**154**	Cadmium compound
2571	**156**	Alkylsulfuric acids
2571	**156**	Alkylsulphuric acids
2572	**153**	Phenylhydrazine
2573	**141**	Thallium chlorate
2574	**151**	Tricresyl phosphate
2576	**137**	Phosphorus oxybromide, molten
2577	**156**	Phenylacetyl chloride
2578	**157**	Phosphorus trioxide
2579	**153**	Piperazine
2580	**154**	Aluminum bromide, solution
2581	**154**	Aluminum chloride, solution
2582	**154**	Ferric chloride, solution

ID No.	Guide No.	Name of Material
2583	**153**	Alkyl sulfonic acids, solid, with more than 5% free Sulfuric acid
2583	**153**	Alkyl sulphonic acids, solid, with more than 5% free Sulphuric acid
2583	**153**	Aryl sulfonic acids, solid, with more than 5% free Sulfuric acid
2583	**153**	Aryl sulphonic acids, solid, with more than 5% free Sulphuric acid
2584	**153**	Alkyl sulfonic acids, liquid, with more than 5% free Sulfuric acid
2584	**153**	Alkyl sulphonic acids, liquid, with more than 5% free Sulphuric acid
2584	**153**	Aryl sulfonic acids, liquid, with more than 5% free Sulfuric acid
2584	**153**	Aryl sulphonic acids, liquid, with more than 5% free Sulphuric acid
2585	**153**	Alkyl sulfonic acids, solid, with not more than 5% free Sulfuric acid
2585	**153**	Alkyl sulphonic acids, solid, with not more than 5% free Sulphuric acid
2585	**153**	Aryl sulfonic acids, solid, with not more than 5% free Sulfuric acid
2585	**153**	Aryl sulphonic acids, solid, with not more than 5% free Sulphuric acid
2586	**153**	Alkyl sulfonic acids, liquid, with not more than 5% free Sulfuric acid
2586	**153**	Alkyl sulphonic acids, liquid, with not more than 5% free Sulphuric acid

ID No.	Guide No.	Name of Material
2586	153	Aryl sulfonic acids, liquid, with not more than 5% free Sulfuric acid
2586	153	Aryl sulphonic acids, liquid, with not more than 5% free Sulphuric acid
2587	153	Benzoquinone
2588	151	Pesticide, solid, poisonous, n.o.s.
2588	151	Pesticide, solid, toxic, n.o.s.
2589	155	Vinyl chloroacetate
2590	171	Asbestos, chrysolite
2590	171	Asbestos, white
2590	171	White asbestos
2591	120	Xenon, refrigerated liquid (cryogenic liquid)
2599	126	Chlorotrifluoromethane and Trifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane
2599	126	Refrigerant gas R-503
2599	126	Trifluoromethane and Chlorotrifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane
2600	119	Carbon monoxide and Hydrogen mixture, compressed
2600	119	Hydrogen and Carbon monoxide mixture, compressed
2601	115	Cyclobutane
2602	126	Dichlorodifluoromethane and Difluoroethane azeotropic mixture with approximately 74% Dichlorodifluoromethane
2602	126	Difluoroethane and Dichlorodifluoromethane azeotropic mixture with approximately 74% Dichlorodifluoromethane

ID No.	Guide No.	Name of Material
2602	126	Refrigerant gas R-500
2603	131	Cycloheptatriene
2604	132	Boron trifluoride diethyl etherate
2605	155	Methoxymethyl isocyanate
2606	155	Methyl orthosilicate
2607	129P	Acrolein dimer, stabilized
2608	129	Nitropropanes
2609	156	Triallyl borate
2610	132	Triallylamine
2611	131	Propylene chlorohydrin
2612	127	Methyl propyl ether
2614	129	Methallyl alcohol
2615	127	Ethyl propyl ether
2616	129	Triisopropyl borate
2617	129	Methylcyclohexanols
2618	130P	Vinyltoluenes, stabilized
2619	132	Benzyldimethylamine
2620	130	Amyl butyrates
2621	127	Acetyl methyl carbinol
2622	131P	Glycidaldehyde
2623	133	Firelighters, solid, with flammable liquid
2624	138	Magnesium silicide
2626	140	Chloric acid, aqueous solution, with not more than 10% Chloric acid
2627	140	Nitrites, inorganic, n.o.s.
2628	151	Potassium fluoroacetate
2629	151	Sodium fluoroacetate
2630	151	Selenates
2630	151	Selenites
2642	154	Fluoroacetic acid

ID No.	Guide No.	Name of Material
2643	155	Methyl bromoacetate
2644	151	Methyl iodide
2645	153	Phenacyl bromide
2646	151	Hexachlorocyclopentadiene
2647	153	Malononitrile
2648	154	1,2-Dibromobutan-3-one
2649	153	1,3-Dichloroacetone
2650	153	1,1-Dichloro-1-nitroethane
2651	153	4,4'-Diaminodiphenylmethane
2653	156	Benzyl iodide
2655	151	Potassium fluorosilicate
2655	151	Potassium silicofluoride
2656	154	Quinoline
2657	153	Selenium disulfide
2657	153	Selenium disulphide
2659	151	Sodium chloroacetate
2660	153	Mononitrotoluidines
2660	153	Nitrotoluidines (mono)
2661	153	Hexachloroacetone
2662	153	Hydroquinone
2664	160	Dibromomethane
2667	152	Butyltoluenes
2668	131	Chloroacetonitrile
2669	152	Chlorocresols
2669	152	Chlorocresols, solution
2670	157	Cyanuric chloride
2671	153	Aminopyridines
2672	154	Ammonia, solution, with more than 10% but not more than 35% Ammonia
2672	154	Ammonium hydroxide
2672	154	Ammonium hydroxide, with more than 10% but not more than 35% Ammonia
2673	151	2-Amino-4-chlorophenol
2674	154	Sodium fluorosilicate
2674	154	Sodium silicofluoride
2676	119	Stibine
2677	154	Rubidium hydroxide, solution
2678	154	Rubidium hydroxide
2678	154	Rubidium hydroxide, solid
2679	154	Lithium hydroxide, solution
2680	154	Lithium hydroxide
2680	154	Lithium hydroxide, monohydrate
2681	154	Caesium hydroxide, solution
2681	154	Cesium hydroxide, solution
2682	157	Caesium hydroxide
2682	157	Cesium hydroxide
2683	132	Ammonium sulfide, solution
2683	132	Ammonium sulphide, solution
2684	132	3-Diethylaminopropylamine
2684	132	Diethylaminopropylamine
2685	132	N,N-Diethylethylenediamine
2686	132	2-Diethylaminoethanol
2687	133	Dicyclohexylammonium nitrite
2688	159	1-Bromo-3-chloropropane
2689	153	Glycerol alpha-monochlorohydrin
2690	152	N,n-Butylimidazole
2691	137	Phosphorus pentabromide
2692	157	Boron tribromide
2693	154	Bisulfites, aqueous solution, n.o.s.

ID No.	Guide No.	Name of Material
2693	154	Bisulphites, aqueous solution, n.o.s.
2698	156	Tetrahydrophthalic anhydrides
2699	154	Trifluoroacetic acid
2705	153P	1-Pentol
2707	127	Dimethyldioxanes
2709	128	Butylbenzenes
2710	128	Dipropyl ketone
2713	153	Acridine
2714	133	Zinc resinate
2715	133	Aluminum resinate
2716	153	1,4-Butynediol
2717	133	Camphor
2717	133	Camphor, synthetic
2719	141	Barium bromate
2720	141	Chromium nitrate
2721	141	Copper chlorate
2722	140	Lithium nitrate
2723	140	Magnesium chlorate
2724	140	Manganese nitrate
2725	140	Nickel nitrate
2726	140	Nickel nitrite
2727	141	Thallium nitrate
2728	140	Zirconium nitrate
2729	152	Hexachlorobenzene
2730	152	Nitroanisoles, liquid
2730	152	Nitroanisoles, solid
2732	152	Nitrobromobenzenes, liquid
2732	152	Nitrobromobenzenes, solid
2733	132	Amines, flammable, corrosive, n.o.s.
2733	132	Polyalkylamines, n.o.s.
2733	132	Polyamines, flammable, corrosive, n.o.s.
2734	132	Amines, liquid, corrosive, flammable, n.o.s.
2734	132	Polyalkylamines, n.o.s.
2734	132	Polyamines, liquid, corrosive, flammable, n.o.s.
2735	153	Amines, liquid, corrosive, n.o.s.
2735	153	Polyalkylamines, n.o.s.
2735	153	Polyamines, liquid, corrosive, n.o.s.
2738	153	N-Butylaniline
2739	156	Butyric anhydride
2740	155	n-Propyl chloroformate
2741	141	Barium hypochlorite, with more than 22% available Chlorine
2742	155	sec-Butyl chloroformate
2742	155	Chloroformates, poisonous, corrosive, flammable, n.o.s.
2742	155	Chloroformates, toxic, corrosive, flammable, n.o.s.
2742	155	Isobutyl chloroformate
2743	155	n-Butyl chloroformate
2744	155	Cyclobutyl chloroformate
2745	157	Chloromethyl chloroformate
2746	156	Phenyl chloroformate
2747	156	tert-Butylcyclohexyl chloroformate
2748	156	2-Ethylhexyl chloroformate
2749	130	Tetramethylsilane
2750	153	1,3-Dichloropropanol-2
2751	155	Diethylthiophosphoryl chloride
2752	127	1,2-Epoxy-3-ethoxypropane
2753	153	N-Ethylbenzyltoluidines, liquid

ID No.	Guide No.	Name of Material
2753	**153**	N-Ethylbenzyltoluidines, solid
2754	**153**	N-Ethyltoluidines
2757	**151**	Carbamate pesticide, solid, poisonous
2757	**151**	Carbamate pesticide, solid, toxic
2758	**131**	Carbamate pesticide, liquid, flammable, poisonous
2758	**131**	Carbamate pesticide, liquid, flammable, toxic
2759	**151**	Arsenical pesticide, solid, poisonous
2759	**151**	Arsenical pesticide, solid, toxic
2760	**131**	Arsenical pesticide, liquid, flammable, poisonous
2760	**131**	Arsenical pesticide, liquid, flammable, toxic
2761	**151**	Organochlorine pesticide, solid, poisonous
2761	**151**	Organochlorine pesticide, solid, toxic
2762	**131**	Organochlorine pesticide, liquid, flammable, poisonous
2762	**131**	Organochlorine pesticide, liquid, flammable, toxic
2763	**151**	Triazine pesticide, solid, poisonous
2763	**151**	Triazine pesticide, solid, toxic
2764	**131**	Triazine pesticide, liquid, flammable, poisonous
2764	**131**	Triazine pesticide, liquid, flammable, toxic
2771	**151**	Thiocarbamate pesticide, solid, poisonous
2771	**151**	Thiocarbamate pesticide, solid, toxic
2772	**131**	Thiocarbamate pesticide, liquid, flammable, poisonous
2772	**131**	Thiocarbamate pesticide, liquid, flammable, toxic
2775	**151**	Copper based pesticide, solid, poisonous
2775	**151**	Copper based pesticide, solid, toxic
2776	**131**	Copper based pesticide, liquid, flammable, poisonous
2776	**131**	Copper based pesticide, liquid, flammable, toxic
2777	**151**	Mercury based pesticide, solid, poisonous
2777	**151**	Mercury based pesticide, solid, toxic
2778	**131**	Mercury based pesticide, liquid, flammable, poisonous
2778	**131**	Mercury based pesticide, liquid, flammable, toxic
2779	**153**	Substituted nitrophenol pesticide, solid, poisonous
2779	**153**	Substituted nitrophenol pesticide, solid, toxic
2780	**131**	Substituted nitrophenol pesticide, liquid, flammable, poisonous
2780	**131**	Substituted nitrophenol pesticide, liquid, flammable, toxic
2781	**151**	Bipyridilium pesticide, solid, poisonous
2781	**151**	Bipyridilium pesticide, solid, toxic
2782	**131**	Bipyridilium pesticide, liquid, flammable, poisonous
2782	**131**	Bipyridilium pesticide, liquid, flammable, toxic
2783	**152**	Organophosphorus pesticide, solid, poisonous
2783	**152**	Organophosphorus pesticide, solid, toxic

ID No.	Guide No.	Name of Material
2784	131	Organophosphorus pesticide, liquid, flammable, poisonous
2784	131	Organophosphorus pesticide, liquid, flammable, toxic
2785	152	4-Thiapentanal
2786	153	Organotin pesticide, solid, poisonous
2786	153	Organotin pesticide, solid, toxic
2787	131	Organotin pesticide, liquid, flammable, poisonous
2787	131	Organotin pesticide, liquid, flammable, toxic
2788	153	Organotin compound, liquid, n.o.s.
2789	132	Acetic acid, glacial
2789	132	Acetic acid, solution, more than 80% acid
2790	153	Acetic acid, solution, more than 10% but not more than 80% acid
2793	170	Ferrous metal borings, shavings, turnings or cuttings
2794	154	Batteries, wet, filled with acid
2795	154	Batteries, wet, filled with alkali
2796	157	Battery fluid, acid
2796	157	Sulfuric acid, with not more than 51% acid
2796	157	Sulphuric acid, with not more than 51% acid
2797	154	Battery fluid, alkali
2798	137	Benzene phosphorus dichloride
2798	137	Phenylphosphorus dichloride
2799	137	Benzene phosphorus thiodichloride
2799	137	Phenylphosphorus thiodichloride
2800	154	Batteries, wet, non-spillable

ID No.	Guide No.	Name of Material
2801	154	Dye, liquid, corrosive, n.o.s.
2801	154	Dye intermediate, liquid, corrosive, n.o.s.
2802	154	Copper chloride
2803	172	Gallium
2805	138	Lithium hydride, fused solid
2806	138	Lithium nitride
2807	171	Magnetized material
2809	172	Mercury
2809	172	Mercury metal
2810	153	Buzz
2810	153	BZ
2810	153	Compounds, tree or weed killing, liquid (toxic)
2810	153	CS
2810	153	DC
2810	153	GA
2810	153	GB
2810	153	GD
2810	153	GF
2810	153	H
2810	153	HD
2810	153	HL
2810	153	HN-1
2810	153	HN-2
2810	153	HN-3
2810	153	L (Lewisite)
2810	153	Lewisite
2810	153	Mustard
2810	153	Mustard Lewisite
2810	153	Poisonous liquid, organic, n.o.s.

ID No.	Guide No.	Name of Material
2810	153	Sarin
2810	153	Soman
2810	153	Tabun
2810	153	Thickened GD
2810	153	Toxic liquid, organic, n.o.s.
2810	153	VX
2811	154	CX
2811	154	Poisonous solid, organic, n.o.s.
2811	154	Toxic solid, organic, n.o.s.
2812	154	Sodium aluminate, solid
2813	138	Water-reactive solid, n.o.s.
2814	158	Infectious substance, affecting humans
2815	153	N-Aminoethylpiperazine
2817	154	Ammonium bifluoride, solution
2817	154	Ammonium hydrogendifluoride, solution
2818	154	Ammonium polysulfide, solution
2818	154	Ammonium polysulphide, solution
2819	153	Amyl acid phosphate
2820	153	Butyric acid
2821	153	Phenol solution
2822	153	2-Chloropyridine
2823	153	Crotonic acid
2823	153	Crotonic acid, liquid
2823	153	Crotonic acid, solid
2826	155	Ethyl chlorothioformate
2829	153	Caproic acid
2829	153	Hexanoic acid
2830	139	Lithium ferrosilicon
2831	160	1,1,1-Trichloroethane
2834	154	Phosphorous acid
2835	138	Sodium aluminum hydride
2837	154	Bisulfates, aqueous solution
2837	154	Bisulphates, aqueous solution
2837	154	Sodium bisulfate, solution
2837	154	Sodium bisulphate, solution
2838	129P	Vinyl butyrate, stabilized
2839	153	Aldol
2840	129	Butyraldoxime
2841	131	Di-n-amylamine
2842	129	Nitroethane
2844	138	Calcium manganese silicon
2845	135	Ethyl phosphonous dichloride, anhydrous
2845	135	Methyl phosphonous dichloride
2845	135	Pyrophoric liquid, organic, n.o.s.
2846	135	Pyrophoric solid, organic, n.o.s.
2849	153	3-Chloropropanol-1
2850	128	Propylene tetramer
2851	157	Boron trifluoride, dihydrate
2852	113	Dipicryl sulfide, wetted with not less than 10% water
2852	113	Dipicryl sulphide, wetted with not less than 10% water
2853	151	Magnesium fluorosilicate
2853	151	Magnesium silicofluoride
2854	151	Ammonium fluorosilicate
2854	151	Ammonium silicofluoride
2855	151	Zinc fluorosilicate
2855	151	Zinc silicofluoride
2856	151	Fluorosilicates, n.o.s.
2856	151	Silicofluorides, n.o.s.

ID No.	Guide No.	Name of Material
2857	**126**	Refrigerating machines, containing Ammonia solutions (UN2672)
2857	**126**	Refrigerating machines, containing non-flammable, non-poisonous gases
2857	**126**	Refrigerating machines, containing non-flammable, non-toxic gases
2858	**170**	Zirconium, dry, coiled wire, finished metal sheets or strip
2859	**154**	Ammonium metavanadate
2861	**151**	Ammonium polyvanadate
2862	**151**	Vanadium pentoxide
2863	**154**	Sodium ammonium vanadate
2864	**151**	Potassium metavanadate
2865	**154**	Hydroxylamine sulfate
2865	**154**	Hydroxylamine sulphate
2869	**157**	Titanium trichloride mixture
2870	**135**	Aluminum borohydride
2870	**135**	Aluminum borohydride in devices
2871	**170**	Antimony powder
2872	**159**	Dibromochloropropanes
2873	**153**	Dibutylaminoethanol
2874	**153**	Furfuryl alcohol
2875	**151**	Hexachlorophene
2876	**153**	Resorcinol
2878	**170**	Titanium sponge granules
2878	**170**	Titanium sponge powders
2879	**157**	Selenium oxychloride
2880	**140**	Calcium hypochlorite, hydrated, with not less than 5.5% but not more than 16% water
2880	**140**	Calcium hypochlorite, hydrated mixture, with not less than 5.5% but not more than 16% water
2881	**135**	Metal catalyst, dry
2881	**135**	Nickel catalyst, dry
2900	**158**	Infectious substance, affecting animals only
2901	**124**	Bromine chloride
2902	**151**	Pesticide, liquid, poisonous, n.o.s.
2902	**151**	Pesticide, liquid, toxic, n.o.s.
2903	**131**	Pesticide, liquid, poisonous, flammable, n.o.s.
2903	**131**	Pesticide, liquid, toxic, flammable, n.o.s.
2904	**154**	Chlorophenolates, liquid
2904	**154**	Phenolates, liquid
2905	**154**	Chlorophenolates, solid
2905	**154**	Phenolates, solid
2907	**133**	Isosorbide dinitrate mixture
2908	**161**	Radioactive material, excepted package, empty packaging
2909	**161**	Radioactive material, excepted package, articles manufactured from depleted Uranium
2909	**161**	Radioactive material, excepted package, articles manufactured from natural Thorium
2909	**161**	Radioactive material, excepted package, articles manufactured from natural Uranium
2910	**161**	Radioactive material, excepted package, limited quantity of material

ID No.	Guide No.	Name of Material
2911	**161**	Radioactive material, excepted package, instruments or articles
2912	**162**	Radioactive material, low specific activity (LSA-I), non fissile or fissile-excepted
2913	**162**	Radioactive material, surface contaminated objects (SCO-I), non fissile or fissile-excepted
2913	**162**	Radioactive material, surface contaminated objects (SCO-II), non fissile or fissile-excepted
2915	**163**	Radioactive material, Type A package, non-special form, non fissile or fissile-excepted
2916	**163**	Radioactive material, Type B(U) package, non fissile or fissile-excepted
2917	**163**	Radioactive material, Type B(M) package, non fissile or fissile-excepted
2919	**163**	Radioactive material, transported under special arrangement, non fissile or fissile-excepted
2920	**132**	Corrosive liquid, flammable, n.o.s.
2921	**134**	Corrosive solid, flammable, n.o.s.
2922	**154**	Corrosive liquid, poisonous, n.o.s.
2922	**154**	Corrosive liquid, toxic, n.o.s.
2923	**154**	Corrosive solid, poisonous, n.o.s.
2923	**154**	Corrosive solid, toxic, n.o.s.
2924	**132**	Flammable liquid, corrosive, n.o.s
2925	**134**	Flammable solid, corrosive, organic, n.o.s.
2926	**134**	Flammable solid, poisonous, organic, n.o.s.
2926	**134**	Flammable solid, toxic, organic, n.o.s.
2927	**154**	Ethyl phosphonothioic dichloride, anhydrous
2927	**154**	Ethyl phosphorodichloridate
2927	**154**	Poisonous liquid, corrosive, organic, n.o.s.
2927	**154**	Toxic liquid, corrosive, organic, n.o.s.
2928	**154**	Poisonous solid, corrosive, organic, n.o.s.
2928	**154**	Toxic solid, corrosive, organic, n.o.s.
2929	**131**	Poisonous liquid, flammable, organic, n.o.s.
2929	**131**	Toxic liquid, flammable, organic, n.o.s.
2930	**134**	Poisonous solid, flammable, organic, n.o.s.
2930	**134**	Toxic solid, flammable, organic, n.o.s.
2931	**151**	Vanadyl sulfate
2931	**151**	Vanadyl sulphate
2933	**129**	Methyl 2-chloropropionate
2934	**129**	Isopropyl 2-chloropropionate
2935	**129**	Ethyl 2-chloropropionate
2936	**153**	Thiolactic acid
2937	**153**	alpha-Methylbenzyl alcohol
2937	**153**	alpha-Methylbenzyl alcohol, liquid
2937	**153**	Methylbenzyl alcohol (alpha)
2940	**135**	Cyclooctadiene phosphines
2940	**135**	9-Phosphabicyclononanes
2941	**153**	Fluoroanilines

ID No.	Guide No.	Name of Material
2942	**153**	2-Trifluoromethylaniline
2943	**129**	Tetrahydrofurfurylamine
2945	**132**	N-Methylbutylamine
2946	**153**	2-Amino-5-diethylaminopentane
2947	**155**	Isopropyl chloroacetate
2948	**153**	3-Trifluoromethylaniline
2949	**154**	Sodium hydrosulfide, hydrated, with not less than 25% water of crystallization
2949	**154**	Sodium hydrosulfide, with not less than 25% water of crystallization
2949	**154**	Sodium hydrosulphide, hydrated, with not less than 25% water of crystallization
2949	**154**	Sodium hydrosulphide, with not less than 25% water of crystallization
2950	**138**	Magnesium granules, coated
2956	**149**	5-tert-Butyl-2,4,6-trinitro-m-xylene
2956	**149**	Musk xylene
2965	**139**	Boron trifluoride dimethyl etherate
2966	**153**	Thioglycol
2967	**154**	Sulfamic acid
2967	**154**	Sulphamic acid
2968	**135**	Maneb, stabilized
2968	**135**	Maneb preparation, stabilized
2969	**171**	Castor beans, meal, pomace or flake
2977	**166**	Radioactive material, Uranium hexafluoride, fissile
2977	**166**	Uranium hexafluoride, radioactive material, fissile
2978	**166**	Radioactive material, Uranium hexafluoride, non fissile or fissile-excepted
2978	**166**	Uranium hexafluoride, radioactive material, non fissile or fissile-excepted
2983	**129P**	Ethylene oxide and Propylene oxide mixture, with not more than 30% Ethylene oxide
2983	**129P**	Propylene oxide and Ethylene oxide mixture, with not more than 30% Ethylene oxide
2984	**140**	Hydrogen peroxide, aqueous solution, with not less than 8% but less than 20% Hydrogen peroxide
2985	**155**	Chlorosilanes, flammable, corrosive, n.o.s.
2986	**155**	Chlorosilanes, corrosive, flammable, n.o.s.
2987	**156**	Chlorosilanes, corrosive, n.o.s.
2988	**139**	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.
2989	**133**	Lead phosphite, dibasic
2990	**171**	Life-saving appliances, self-inflating
2991	**131**	Carbamate pesticide, liquid, poisonous, flammable
2991	**131**	Carbamate pesticide, liquid, toxic, flammable
2992	**151**	Carbamate pesticide, liquid, poisonous
2992	**151**	Carbamate pesticide, liquid, toxic
2993	**131**	Arsenical pesticide, liquid, poisonous, flammable
2993	**131**	Arsenical pesticide, liquid, toxic, flammable
2994	**151**	Arsenical pesticide, liquid, poisonous

ID No.	Guide No.	Name of Material
2994	**151**	Arsenical pesticide, liquid, toxic
2995	**131**	Organochlorine pesticide, liquid, poisonous, flammable
2995	**131**	Organochlorine pesticide, liquid, toxic, flammable
2996	**151**	Organochlorine pesticide, liquid, poisonous
2996	**151**	Organochlorine pesticide, liquid, toxic
2997	**131**	Triazine pesticide, liquid, poisonous, flammable
2997	**131**	Triazine pesticide, liquid, toxic, flammable
2998	**151**	Triazine pesticide, liquid, poisonous
2998	**151**	Triazine pesticide, liquid, toxic
3002	**151**	Phenyl urea pesticide, liquid, poisonous
3002	**151**	Phenyl urea pesticide, liquid, toxic
3005	**131**	Thiocarbamate pesticide, liquid, poisonous, flammable
3005	**131**	Thiocarbamate pesticide, liquid, toxic, flammable
3006	**151**	Thiocarbamate pesticide, liquid, poisonous
3006	**151**	Thiocarbamate pesticide, liquid, toxic
3009	**131**	Copper based pesticide, liquid, poisonous, flammable
3009	**131**	Copper based pesticide, liquid, toxic, flammable
3010	**151**	Copper based pesticide, liquid, poisonous
3010	**151**	Copper based pesticide, liquid, toxic
3011	**131**	Mercury based pesticide, liquid, poisonous, flammable
3011	**131**	Mercury based pesticide, liquid, toxic, flammable
3012	**151**	Mercury based pesticide, liquid, poisonous
3012	**151**	Mercury based pesticide, liquid, toxic
3013	**131**	Substituted nitrophenol pesticide, liquid, poisonous, flammable
3013	**131**	Substituted nitrophenol pesticide, liquid, toxic, flammable
3014	**153**	Substituted nitrophenol pesticide, liquid, poisonous
3014	**153**	Substituted nitrophenol pesticide, liquid, toxic
3015	**131**	Bipyridilium pesticide, liquid, poisonous, flammable
3015	**131**	Bipyridilium pesticide, liquid, toxic, flammable
3016	**151**	Bipyridilium pesticide, liquid, poisonous
3016	**151**	Bipyridilium pesticide, liquid, toxic
3017	**131**	Organophosphorus pesticide, liquid, poisonous, flammable
3017	**131**	Organophosphorus pesticide, liquid, toxic, flammable
3018	**152**	Organophosphorus pesticide, liquid, poisonous
3018	**152**	Organophosphorus pesticide, liquid, toxic
3019	**131**	Organotin pesticide, liquid, poisonous, flammable
3019	**131**	Organotin pesticide, liquid, toxic, flammable
3020	**153**	Organotin pesticide, liquid, poisonous
3020	**153**	Organotin pesticide, liquid, toxic

ID No.	Guide No.	Name of Material
3021	**131**	Pesticide, liquid, flammable, poisonous, n.o.s.
3021	**131**	Pesticide, liquid, flammable, toxic, n.o.s.
3022	**127P**	1,2-Butylene oxide, stabilized
3023	**131**	2-Methyl-2-heptanethiol
3024	**131**	Coumarin derivative pesticide, liquid, flammable, poisonous
3024	**131**	Coumarin derivative pesticide, liquid, flammable, toxic
3025	**131**	Coumarin derivative pesticide, liquid, poisonous, flammable
3025	**131**	Coumarin derivative pesticide, liquid, toxic, flammable
3026	**151**	Coumarin derivative pesticide, liquid, poisonous
3026	**151**	Coumarin derivative pesticide, liquid, toxic
3027	**151**	Coumarin derivative pesticide, solid, poisonous
3027	**151**	Coumarin derivative pesticide, solid, toxic
3028	**154**	Batteries, dry, containing Potassium hydroxide solid
3048	**157**	Aluminum phosphide pesticide
3049	**138**	Metal alkyl halides, water-reactive, n.o.s.
3049	**138**	Metal aryl halides, water-reactive, n.o.s.
3050	**138**	Metal alkyl hydrides, water-reactive, n.o.s.
3050	**138**	Metal aryl hydrides, water-reactive, n.o.s.
3051	**135**	Aluminum alkyls
3052	**135**	Aluminum alkyl halides, liquid
3052	**135**	Aluminum alkyl halides, solid
3053	**135**	Magnesium alkyls

ID No.	Guide No.	Name of Material
3054	**129**	Cyclohexanethiol
3054	**129**	Cyclohexyl mercaptan
3055	**154**	2-(2-Aminoethoxy)ethanol
3056	**129**	n-Heptaldehyde
3057	**125**	Trifluoroacetyl chloride
3064	**127**	Nitroglycerin, solution in alcohol, with more than 1% but not more than 5% Nitroglycerin
3065	**127**	Alcoholic beverages
3066	**153**	Paint (corrosive)
3066	**153**	Paint related material (corrosive)
3070	**126**	Dichlorodifluoromethane and Ethylene oxide mixture, with not more than 12.5% Ethylene oxide
3070	**126**	Ethylene oxide and Dichlorodifluoromethane mixture, with not more than 12.5% Ethylene oxide
3071	**131**	Mercaptan mixture, liquid, poisonous, flammable, n.o.s.
3071	**131**	Mercaptan mixture, liquid, toxic, flammable, n.o.s.
3071	**131**	Mercaptans, liquid, poisonous, flammable, n.o.s.
3071	**131**	Mercaptans, liquid, toxic, flammable, n.o.s.
3072	**171**	Life-saving appliances, not self-inflating
3073	**131P**	Vinylpyridines, stabilized
3076	**138**	Aluminum alkyl hydrides
3077	**171**	Environmentally hazardous substance, solid, n.o.s.
3077	**171**	Hazardous waste, solid, n.o.s.
3077	**171**	Other regulated substances, solid, n.o.s.

ID No.	Guide No.	Name of Material
3078	**138**	Cerium, turnings or gritty powder
3079	**131P**	Methacrylonitrile, stabilized
3080	**155**	Isocyanate solution, poisonous, flammable, n.o.s.
3080	**155**	Isocyanate solution, toxic, flammable, n.o.s.
3080	**155**	Isocyanates, poisonous, flammable, n.o.s.
3080	**155**	Isocyanates, toxic, flammable, n.o.s.
3082	**171**	Environmentally hazardous substance, liquid, n.o.s.
3082	**171**	Hazardous waste, liquid, n.o.s.
3082	**171**	Other regulated substances, liquid, n.o.s.
3083	**124**	Perchloryl fluoride
3084	**140**	Corrosive solid, oxidizing, n.o.s.
3085	**140**	Oxidizing solid, corrosive, n.o.s.
3086	**141**	Poisonous solid, oxidizing, n.o.s.
3086	**141**	Toxic solid, oxidizing, n.o.s.
3087	**141**	Oxidizing solid, poisonous, n.o.s.
3087	**141**	Oxidizing solid, toxic, n.o.s.
3088	**135**	Self-heating solid, organic, n.o.s.
3089	**170**	Metal powder, flammable, n.o.s.
3090	**138**	Lithium batteries
3090	**138**	Lithium metal batteries (including lithium alloy batteries)
3091	**138**	Lithium batteries contained in equipment
3091	**138**	Lithium batteries packed with equipment
3091	**138**	Lithium metal batteries contained in equipment (including lithium alloy batteries)
3091	**138**	Lithium metal batteries packed with equipment (including lithium alloy batteries)
3092	**129**	1-Methoxy-2-propanol
3093	**140**	Corrosive liquid, oxidizing, n.o.s.
3094	**138**	Corrosive liquid, water-reactive, n.o.s.
3095	**136**	Corrosive solid, self-heating, n.o.s.
3096	**138**	Corrosive solid, water-reactive, n.o.s.
3097	**140**	Flammable solid, oxidizing, n.o.s.
3098	**140**	Oxidizing liquid, corrosive, n.o.s.
3099	**142**	Oxidizing liquid, poisonous, n.o.s.
3099	**142**	Oxidizing liquid, toxic, n.o.s.
3100	**135**	Oxidizing solid, self-heating, n.o.s.
3101	**146**	Organic peroxide type B, liquid
3102	**146**	Organic peroxide type B, solid
3103	**146**	Organic peroxide type C, liquid
3104	**146**	Organic peroxide type C, solid
3105	**145**	Organic peroxide type D, liquid
3106	**145**	Organic peroxide type D, solid
3107	**145**	Organic peroxide type E, liquid
3108	**145**	Organic peroxide type E, solid
3109	**145**	Organic peroxide type F, liquid
3110	**145**	Organic peroxide type F, solid
3111	**148**	Organic peroxide type B, liquid, temperature controlled

ID No.	Guide No.	Name of Material
3112	**148**	Organic peroxide type B, solid, temperature controlled
3113	**148**	Organic peroxide type C, liquid, temperature controlled
3114	**148**	Organic peroxide type C, solid, temperature controlled
3115	**148**	Organic peroxide type D, liquid, temperature controlled
3116	**148**	Organic peroxide type D, solid, temperature controlled
3117	**148**	Organic peroxide type E, liquid, temperature controlled
3118	**148**	Organic peroxide type E, solid, temperature controlled
3119	**148**	Organic peroxide type F, liquid, temperature controlled
3120	**148**	Organic peroxide type F, solid, temperature controlled
3121	**144**	Oxidizing solid, water-reactive, n.o.s.
3122	**142**	Poisonous liquid, oxidizing, n.o.s.
3122	**142**	Toxic liquid, oxidizing, n.o.s.
3123	**139**	Poisonous liquid, water-reactive, n.o.s.
3123	**139**	Toxic liquid, water-reactive, n.o.s.
3124	**136**	Poisonous solid, self-heating, n.o.s.
3124	**136**	Toxic solid, self-heating, n.o.s.
3125	**139**	Poisonous solid, water-reactive, n.o.s.
3125	**139**	Toxic solid, water-reactive, n.o.s.
3126	**136**	Self-heating solid, corrosive, organic, n.o.s.
3127	**135**	Self-heating solid, oxidizing, n.o.s.
3128	**136**	Self-heating solid, poisonous, organic, n.o.s.
3128	**136**	Self-heating solid, toxic, organic, n.o.s.
3129	**138**	Water-reactive liquid, corrosive, n.o.s.
3130	**139**	Water-reactive liquid, poisonous, n.o.s.
3130	**139**	Water-reactive liquid, toxic, n.o.s.
3131	**138**	Water-reactive solid, corrosive, n.o.s.
3132	**138**	Water-reactive solid, flammable, n.o.s.
3133	**138**	Water-reactive solid, oxidizing, n.o.s.
3134	**139**	Water-reactive solid, poisonous, n.o.s.
3134	**139**	Water-reactive solid, toxic, n.o.s.
3135	**138**	Water-reactive solid, self-heating, n.o.s.
3136	**120**	Trifluoromethane, refrigerated liquid
3137	**140**	Oxidizing solid, flammable, n.o.s.
3138	**115**	Acetylene, Ethylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene
3138	**115**	Ethylene, Acetylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene

ID No.	Guide No.	Name of Material
3138	**115**	Propylene, Ethylene and Acetylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene
3139	**140**	Oxidizing liquid, n.o.s.
3140	**151**	Alkaloids, liquid, n.o.s. (poisonous)
3140	**151**	Alkaloid salts, liquid, n.o.s. (poisonous)
3141	**157**	Antimony compound, inorganic, liquid, n.o.s.
3142	**151**	Disinfectant, liquid, poisonous, n.o.s.
3142	**151**	Disinfectant, liquid, toxic, n.o.s.
3143	**151**	Dye, solid, poisonous, n.o.s.
3143	**151**	Dye, solid, toxic, n.o.s.
3143	**151**	Dye intermediate, solid, poisonous, n.o.s.
3143	**151**	Dye intermediate, solid, toxic, n.o.s.
3144	**151**	Nicotine compound, liquid, n.o.s.
3144	**151**	Nicotine preparation, liquid, n.o.s.
3145	**153**	Alkylphenols, liquid, n.o.s. (including C2-C12 homologues)
3146	**153**	Organotin compound, solid, n.o.s.
3147	**154**	Dye, solid, corrosive, n.o.s.
3147	**154**	Dye intermediate, solid, corrosive, n.o.s.
3148	**138**	Water-reactive liquid, n.o.s.
3149	**140**	Hydrogen peroxide and Peroxyacetic acid mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilized
3149	**140**	Peroxyacetic acid and hydrogen peroxide mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilized
3150	**115**	Devices, small, hydrocarbon gas powered, with release device
3150	**115**	Hydrocarbon gas refills for small devices, with release device
3151	**171**	Halogenated monomethyldiphenylmethanes, liquid
3151	**171**	Polyhalogenated biphenyls, liquid
3151	**171**	Polyhalogenated terphenyls, liquid
3152	**171**	Halogenated monomethyldiphenylmethanes, solid
3152	**171**	Polyhalogenated biphenyls, solid
3152	**171**	Polyhalogenated terphenyls, solid
3153	**115**	Perfluoro(methyl vinyl ether)
3154	**115**	Perfluoro(ethyl vinyl ether)
3155	**154**	Pentachlorophenol
3156	**122**	Compressed gas, oxidizing, n.o.s.
3157	**122**	Liquefied gas, oxidizing, n.o.s.
3158	**120**	Gas, refrigerated liquid, n.o.s.
3159	**126**	Refrigerant gas R-134a
3159	**126**	1,1,1,2-Tetrafluoroethane

ID No.	Guide No.	Name of Material
3160	119	Liquefied gas, poisonous, flammable, n.o.s.
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)
3160	119	Liquefied gas, toxic, flammable, n.o.s.
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)
3161	115	Liquefied gas, flammable, n.o.s.
3162	123	Liquefied gas, poisonous, n.o.s.
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone D)
3162	123	Liquefied gas, toxic, n.o.s.
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone D)
3163	126	Liquefied gas, n.o.s.
3164	126	Articles, pressurized, hydraulic (containing non-flammable gas)
3164	126	Articles, pressurized, pneumatic (containing non-flammable gas)
3165	131	Aircraft hydraulic power unit fuel tank
3166	115	Engine, fuel cell, flammable gas powered
3166	128	Engine, fuel cell, flammable liquid powered
3166	128	Engine, internal combustion
3166	115	Engines, internal combustion, flammable gas powered
3166	128	Engines, internal combustion, flammable liquid powered
3166	115	Vehicle, flammable gas powered
3166	128	Vehicle, flammable liquid powered
3166	115	Vehicle, fuel cell, flammable gas powered
3166	128	Vehicle, fuel cell, flammable liquid powered
3167	115	Gas sample, non-pressurized, flammable, n.o.s., not refrigerated liquid
3168	119	Gas sample, non-pressurized, poisonous, flammable, n.o.s., not refrigerated liquid

ID No.	Guide No.	Name of Material
3168	**119**	Gas sample, non-pressurized, toxic, flammable, n.o.s., not refrigerated liquid
3169	**123**	Gas sample, non-pressurized, poisonous, n.o.s., not refrigerated liquid
3169	**123**	Gas sample, non-pressurized, toxic, n.o.s., not refrigerated liquid
3170	**138**	Aluminum dross
3170	**138**	Aluminum remelting by-products
3170	**138**	Aluminum smelting by-products
3171	**154**	Battery-powered equipment (wet battery)
3171	**147**	Battery-powered equipment (with lithium ion batteries)
3171	**138**	Battery-powered equipment (with lithium metal batteries)
3171	**138**	Battery-powered equipment (with sodium batteries)
3171	**154**	Battery-powered vehicle (wet battery)
3171	**147**	Battery-powered vehicle (with lithium ion batteries)
3171	**138**	Battery-powered vehicle (with sodium batteries)
3171	**154**	Wheelchair, electric, with batteries
3172	**153**	Toxins, extracted from living sources, liquid, n.o.s.
3172	**153**	Toxins, extracted from living sources, solid, n.o.s.
3174	**135**	Titanium disulfide
3174	**135**	Titanium disulphide
3175	**133**	Solids containing flammable liquid, n.o.s.
3176	**133**	Flammable solid, organic, molten, n.o.s.
3178	**133**	Flammable solid, inorganic, n.o.s.
3178	**133**	Smokeless powder for small arms
3179	**134**	Flammable solid, poisonous, inorganic, n.o.s.
3179	**134**	Flammable solid, toxic, inorganic, n.o.s.
3180	**134**	Flammable solid, corrosive, inorganic, n.o.s.
3181	**133**	Metal salts of organic compounds, flammable, n.o.s.
3182	**170**	Metal hydrides, flammable, n.o.s.
3183	**135**	Self-heating liquid, organic, n.o.s.
3184	**136**	Self-heating liquid, poisonous, organic, n.o.s.
3184	**136**	Self-heating liquid, toxic, organic, n.o.s.
3185	**136**	Self-heating liquid, corrosive, organic, n.o.s.
3186	**135**	Self-heating liquid, inorganic, n.o.s.
3187	**136**	Self-heating liquid, poisonous, inorganic, n.o.s.
3187	**136**	Self-heating liquid, toxic, inorganic, n.o.s.
3188	**136**	Self-heating liquid, corrosive, inorganic, n.o.s.
3189	**135**	Metal powder, self-heating, n.o.s.
3190	**135**	Self-heating solid, inorganic, n.o.s.
3191	**136**	Self-heating solid, poisonous, inorganic, n.o.s.
3191	**136**	Self-heating solid, toxic, inorganic, n.o.s.

ID No.	Guide No.	Name of Material
3192	**136**	Self-heating solid, corrosive, inorganic, n.o.s.
3194	**135**	Pyrophoric liquid, inorganic, n.o.s.
3200	**135**	Pyrophoric solid, inorganic, n.o.s.
3203	**135**	Pyrophoric organometallic compound, water-reactive, n.o.s.
3205	**135**	Alkaline earth metal alcoholates, n.o.s.
3206	**136**	Alkali metal alcoholates, self-heating, corrosive, n.o.s.
3207	**138**	Organometallic compound, water-reactive, flammable, n.o.s.
3207	**138**	Organometallic compound dispersion, water-reactive, flammable, n.o.s.
3207	**138**	Organometallic compound solution, water-reactive, flammable, n.o.s.
3208	**138**	Metallic substance, water-reactive, n.o.s.
3209	**138**	Metallic substance, water-reactive, self-heating, n.o.s.
3210	**140**	Chlorates, inorganic, aqueous solution, n.o.s.
3211	**140**	Perchlorates, inorganic, aqueous solution, n.o.s.
3212	**140**	Hypochlorites, inorganic, n.o.s.
3213	**140**	Bromates, inorganic, aqueous solution, n.o.s.
3214	**140**	Permanganates, inorganic, aqueous solution, n.o.s.
3215	**140**	Persulfates, inorganic, n.o.s.
3215	**140**	Persulphates, inorganic, n.o.s.
3216	**140**	Persulfates, inorganic, aqueous solution, n.o.s.
3216	**140**	Persulphates, inorganic, aqueous solution, n.o.s.
3218	**140**	Nitrates, inorganic, aqueous solution, n.o.s.
3219	**140**	Nitrites, inorganic, aqueous solution, n.o.s.
3220	**126**	Pentafluoroethane
3220	**126**	Refrigerant gas R-125
3221	**149**	Self-reactive liquid type B
3222	**149**	Self-reactive solid type B
3223	**149**	Self-reactive liquid type C
3224	**149**	Self-reactive solid type C
3225	**149**	Self-reactive liquid type D
3226	**149**	Self-reactive solid type D
3227	**149**	Self-reactive liquid type E
3228	**149**	Self-reactive solid type E
3229	**149**	Self-reactive liquid type F
3230	**149**	Self-reactive solid type F
3231	**150**	Self-reactive liquid type B, temperature controlled
3232	**150**	Self-reactive solid type B, temperature controlled
3233	**150**	Self-reactive liquid type C, temperature controlled
3234	**150**	Self-reactive solid type C, temperature controlled
3235	**150**	Self-reactive liquid type D, temperature controlled
3236	**150**	Self-reactive solid type D, temperature controlled
3237	**150**	Self-reactive liquid type E, temperature controlled
3238	**150**	Self-reactive solid type E, temperature controlled
3239	**150**	Self-reactive liquid type F, temperature controlled

ID No.	Guide No.	Name of Material
3240	**150**	Self-reactive solid type F, temperature controlled
3241	**133**	2-Bromo-2-nitropropane-1, 3-diol
3242	**149**	Azodicarbonamide
3243	**151**	Solids containing poisonous liquid, n.o.s.
3243	**151**	Solids containing toxic liquid, n.o.s.
3244	**154**	Solids containing corrosive liquid, n.o.s.
3245	**171**	Genetically modified micro-organisms
3245	**171**	Genetically modified organisms
3246	**156**	Methanesulfonyl chloride
3246	**156**	Methanesulphonyl chloride
3247	**140**	Sodium peroxoborate, anhydrous
3248	**131**	Medicine, liquid, flammable, poisonous, n.o.s.
3248	**131**	Medicine, liquid, flammable, toxic, n.o.s.
3249	**151**	Medicine, solid, poisonous, n.o.s.
3249	**151**	Medicine, solid, toxic, n.o.s.
3250	**153**	Chloroacetic acid, molten
3251	**133**	Isosorbide-5-mononitrate
3252	**115**	Difluoromethane
3252	**115**	Refrigerant gas R-32
3253	**154**	Disodium trioxosilicate
3254	**135**	Tributylphosphane
3255	**135**	tert-Butyl hypochlorite
3256	**128**	Elevated temperature liquid, flammable, n.o.s., with flash point above 37.8°C (100°F), at or above its flash point
3256	**128**	Elevated temperature liquid, flammable, n.o.s., with flash point above 60°C (140°F), at or above its flash point
3257	**128**	Elevated temperature liquid, n.o.s., at or above 100°C (212°F), and below its flash point
3258	**171**	Elevated temperature solid, n.o.s., at or above 240°C (464°F)
3259	**154**	Amines, solid, corrosive, n.o.s.
3259	**154**	Polyamines, solid, corrosive, n.o.s.
3260	**154**	Corrosive solid, acidic, inorganic, n.o.s.
3261	**154**	Corrosive solid, acidic, organic, n.o.s.
3262	**154**	Corrosive solid, basic, inorganic, n.o.s.
3263	**154**	Corrosive solid, basic, organic, n.o.s.
3264	**154**	Corrosive liquid, acidic, inorganic, n.o.s.
3265	**153**	Corrosive liquid, acidic, organic, n.o.s.
3266	**154**	Corrosive liquid, basic, inorganic, n.o.s.
3267	**153**	Corrosive liquid, basic, organic, n.o.s.
3268	**171**	Air bag inflators
3268	**171**	Air bag modules
3268	**171**	Safety devices
3268	**171**	Seat-belt pre-tensioners
3269	**128**	Polyester resin kit
3269	**128**	Polyester resin kit, liquid base material
3270	**133**	Nitrocellulose membrane filters

ID No.	Guide No.	Name of Material
3271	**127**	Ethers, n.o.s.
3272	**127**	Esters, n.o.s.
3273	**131**	Nitriles, flammable, poisonous, n.o.s.
3273	**131**	Nitriles, flammable, toxic, n.o.s.
3274	**132**	Alcoholates solution, n.o.s., in alcohol
3275	**131**	Nitriles, poisonous, flammable, n.o.s.
3275	**131**	Nitriles, toxic, flammable, n.o.s.
3276	**151**	Nitriles, liquid, poisonous, n.o.s.
3276	**151**	Nitriles, liquid, toxic, n.o.s.
3276	**151**	Nitriles, poisonous, liquid, n.o.s.
3276	**151**	Nitriles, poisonous, n.o.s.
3276	**151**	Nitriles, toxic, liquid, n.o.s.
3276	**151**	Nitriles, toxic, n.o.s.
3277	**154**	Chloroformates, poisonous, corrosive, n.o.s.
3277	**154**	Chloroformates, toxic, corrosive, n.o.s.
3278	**151**	Organophosphorus compound, liquid, poisonous, n.o.s.
3278	**151**	Organophosphorus compound, liquid, toxic, n.o.s.
3278	**151**	Organophosphorus compound, poisonous, liquid, n.o.s.
3278	**151**	Organophosphorus compound, poisonous, n.o.s.
3278	**151**	Organophosphorus compound, toxic, liquid, n.o.s.
3278	**151**	Organophosphorus compound, toxic, n.o.s.
3279	**131**	Organophosphorus compound, poisonous, flammable, n.o.s.
3279	**131**	Organophosphorus compound, toxic, flammable, n.o.s.

ID No.	Guide No.	Name of Material
3280	**151**	Organoarsenic compound, liquid, n.o.s.
3280	**151**	Organoarsenic compound, n.o.s.
3281	**151**	Metal carbonyls, liquid, n.o.s.
3281	**151**	Metal carbonyls, n.o.s.
3282	**151**	Organometallic compound, liquid, poisonous, n.o.s.
3282	**151**	Organometallic compound, liquid, toxic, n.o.s.
3282	**151**	Organometallic compound, poisonous, liquid, n.o.s.
3282	**151**	Organometallic compound, poisonous, n.o.s.
3282	**151**	Organometallic compound, toxic, liquid, n.o.s.
3282	**151**	Organometallic compound, toxic, n.o.s.
3283	**151**	Selenium compound, n.o.s.
3283	**151**	Selenium compound, solid, n.o.s.
3284	**151**	Tellurium compound, n.o.s.
3285	**151**	Vanadium compound, n.o.s.
3286	**131**	Flammable liquid, poisonous, corrosive, n.o.s.
3286	**131**	Flammable liquid, toxic, corrosive, n.o.s.
3287	**151**	Poisonous liquid, inorganic, n.o.s.
3287	**151**	Toxic liquid, inorganic, n.o.s.
3288	**151**	Poisonous solid, inorganic, n.o.s.
3288	**151**	Toxic solid, inorganic, n.o.s.
3289	**154**	Poisonous liquid, corrosive, inorganic, n.o.s.
3289	**154**	Toxic liquid, corrosive, inorganic, n.o.s.

ID No.	Guide No.	Name of Material
3290	154	Poisonous solid, corrosive, inorganic, n.o.s.
3290	154	Toxic solid, corrosive, inorganic, n.o.s.
3291	158	(Bio)Medical waste, n.o.s.
3291	158	Clinical waste, unspecified, n.o.s.
3291	158	Medical waste, n.o.s.
3291	158	Regulated medical waste, n.o.s.
3292	138	Batteries, containing Sodium
3292	138	Cells, containing Sodium
3292	138	Sodium, batteries containing
3293	152	Hydrazine, aqueous solution, with not more than 37% Hydrazine
3294	131	Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide
3295	128	Hydrocarbons, liquid, n.o.s.
3296	126	Heptafluoropropane
3296	126	Refrigerant gas R-227
3297	126	Chlorotetrafluoroethane and Ethylene oxide mixture, with not more than 8.8% Ethylene oxide
3297	126	Ethylene oxide and Chlorotetrafluoroethane mixture, with not more than 8.8% Ethylene oxide
3298	126	Ethylene oxide and Pentafluoroethane mixture, with not more than 7.9% Ethylene oxide
3298	126	Pentafluoroethane and Ethylene oxide mixture, with not more than 7.9% Ethylene oxide
3299	126	Ethylene oxide and Tetrafluoroethane mixture, with not more than 5.6% Ethylene oxide
3299	126	Tetrafluoroethane and Ethylene oxide mixture, with not more than 5.6% Ethylene oxide
3300	119P	Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide
3300	119P	Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide
3301	136	Corrosive liquid, self-heating, n.o.s.
3302	152	2-Dimethylaminoethyl acrylate
3303	124	Compressed gas, poisonous, oxidizing, n.o.s.
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)
3303	124	Compressed gas, toxic, oxidizing, n.o.s.
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)

ID No.	Guide No.	Name of Material
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)
3304	123	Compressed gas, poisonous, corrosive, n.o.s.
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)
3304	123	Compressed gas, toxic, corrosive, n.o.s.
3304	123	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)
3304	123	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)
3304	123	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)
3304	123	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s.
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s.
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s.
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s.
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)

ID No.	Guide No.	Name of Material
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s.
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)
3307	124	Liquefied gas, toxic, oxidizing, n.o.s.
3307	124	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3307	124	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3307	124	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)
3307	124	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)
3308	123	Liquefied gas, poisonous, corrosive, n.o.s.
3308	123	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)
3308	123	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)
3308	123	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)
3308	123	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)
3308	123	Liquefied gas, toxic, corrosive, n.o.s.
3308	123	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)
3308	123	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)
3308	123	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)
3308	123	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s.
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s.
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)

ID No.	Guide No.	Name of Material
3309	**119**	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s.
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s.
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)
3311	**122**	Gas, refrigerated liquid, oxidizing, n.o.s.
3312	**115**	Gas, refrigerated liquid, flammable, n.o.s.
3313	**135**	Organic pigments, self-heating
3314	**171**	Plastic molding compound
3314	**171**	Plastics moulding compound
3315	**151**	Chemical sample, poisonous
3315	**151**	Chemical sample, toxic

ID No.	Guide No.	Name of Material
3316	**171**	Chemical kit
3316	**171**	First aid kit
3317	**113**	2-Amino-4,6-dinitrophenol, wetted with not less than 20% water
3318	**125**	Ammonia solution, with more than 50% Ammonia
3319	**113**	Nitroglycerin mixture, desensitized, solid, n.o.s., with more than 2% but not more than 10% Nitroglycerin
3320	**157**	Sodium borohydride and Sodium hydroxide solution, with not more than 12% Sodium borohydride and not more than 40% Sodium hydroxide
3321	**162**	Radioactive material, low specific activity (LSA-II), non fissile or fissile-excepted
3322	**162**	Radioactive material, low specific activity (LSA-III), non fissile or fissile-excepted
3323	**163**	Radioactive material, Type C package, non-fissile or fissile excepted
3324	**165**	Radioactive material, low specific activity (LSA-II), fissile
3325	**165**	Radioactive material, low specific activity (LSA-III), fissile
3326	**165**	Radioactive material, surface contaminated objects (SCO-I), fissile
3326	**165**	Radioactive material, surface contaminated objects (SCO-II), fissile
3327	**165**	Radioactive material, Type A package, fissile, non-special form
3328	**165**	Radioactive material, Type B(U) package, fissile

ID No.	Guide No.	Name of Material
3329	**165**	Radioactive material, Type B(M) package, fissile
3330	**165**	Radioactive material, Type C package, fissile
3331	**165**	Radioactive material, transported under special arrangement, fissile
3332	**164**	Radioactive material, Type A package, special form, non fissile or fissile-excepted
3333	**165**	Radioactive material, Type A package, special form, fissile
3334	**171**	Aviation regulated liquid, n.o.s.
3334	**171**	Self-defense spray, non-pressurized
3335	**171**	Aviation regulated solid, n.o.s.
3336	**130**	Mercaptan mixture, liquid, flammable, n.o.s.
3336	**130**	Mercaptans, liquid, flammable, n.o.s.
3337	**126**	Refrigerant gas R-404A
3338	**126**	Refrigerant gas R-407A
3339	**126**	Refrigerant gas R-407B
3340	**126**	Refrigerant gas R-407C
3341	**135**	Thiourea dioxide
3342	**135**	Xanthates
3343	**113**	Nitroglycerin mixture, desensitized, liquid, flammable, n.o.s., with not more than 30% Nitroglycerin
3344	**113**	Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN
3344	**113**	Pentaerythritol tetranitrate mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN
3344	**113**	PETN mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN
3345	**153**	Phenoxyacetic acid derivative pesticide, solid, poisonous
3345	**153**	Phenoxyacetic acid derivative pesticide, solid, toxic
3346	**131**	Phenoxyacetic acid derivative pesticide, liquid, flammable, poisonous
3346	**131**	Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic
3347	**131**	Phenoxyacetic acid derivative pesticide, liquid, poisonous, flammable
3347	**131**	Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable
3348	**153**	Phenoxyacetic acid derivative pesticide, liquid, poisonous
3348	**153**	Phenoxyacetic acid derivative pesticide, liquid, toxic
3349	**151**	Pyrethroid pesticide, solid, poisonous
3349	**151**	Pyrethroid pesticide, solid, toxic
3350	**131**	Pyrethroid pesticide, liquid, flammable, poisonous
3350	**131**	Pyrethroid pesticide, liquid, flammable, toxic
3351	**131**	Pyrethroid pesticide, liquid, poisonous, flammable
3351	**131**	Pyrethroid pesticide, liquid, toxic, flammable
3352	**151**	Pyrethroid pesticide, liquid, poisonous
3352	**151**	Pyrethroid pesticide, liquid, toxic

ID No.	Guide No.	Name of Material
3354	115	Insecticide gas, flammable, n.o.s.
3355	119	Insecticide gas, poisonous, flammable, n.o.s.
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)
3355	119	Insecticide gas, toxic, flammable, n.o.s.
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)
3356	140	Oxygen generator, chemical
3356	140	Oxygen generator, chemical, spent
3357	113	Nitroglycerin mixture, desensitized, liquid, n.o.s., with not more than 30% Nitroglycerin
3358	115	Refrigerating machines, containing flammable, non-poisonous, liquefied gas
3358	115	Refrigerating machines, containing flammable, non-toxic, liquefied gas
3359	171	Fumigated cargo transport unit
3359	171	Fumigated unit
3360	133	Fibers, vegetable, dry
3360	133	Fibres, vegetable, dry
3361	156	Chlorosilanes, poisonous, corrosive, n.o.s.
3361	156	Chlorosilanes, toxic, corrosive, n.o.s.
3362	155	Chlorosilanes, poisonous, corrosive, flammable, n.o.s.
3362	155	Chlorosilanes, toxic, corrosive, flammable, n.o.s.
3363	171	Dangerous goods in apparatus
3363	171	Dangerous goods in machinery
3364	113	Picric acid, wetted with not less than 10% water
3364	113	Trinitrophenol, wetted with not less than 10% water
3365	113	Picryl chloride, wetted with not less than 10% water
3365	113	Trinitrochlorobenzene, wetted with not less than 10% water
3366	113	TNT, wetted with not less than 10% water
3366	113	Trinitrotoluene, wetted with not less than 10% water
3367	113	Trinitrobenzene, wetted with not less than 10% water
3368	113	Trinitrobenzoic acid, wetted with not less than 10% water
3369	113	Sodium dinitro-o-cresolate, wetted with not less than 10% water
3370	113	Urea nitrate, wetted with not less than 10% water

ID No.	Guide No.	Name of Material
3371	129	2-Methylbutanal
3373	158	Biological substance, category B
3374	116	Acetylene, solvent free
3375	140	Ammonium nitrate emulsion
3375	140	Ammonium nitrate gel
3375	140	Ammonium nitrate suspension
3376	113	4-Nitrophenylhydrazine, with not less than 30% water
3377	140	Sodium perborate monohydrate
3378	140	Sodium carbonate peroxyhydrate
3379	128	Desensitized explosive, liquid, n.o.s.
3380	133	Desensitized explosive, solid, n.o.s.
3381	151	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)
3381	151	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)
3382	151	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)
3382	151	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)
3383	131	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)
3383	131	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)
3384	131	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)
3384	131	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)

ID No.	Guide No.	Name of Material
3385	139	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)
3385	139	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)
3386	139	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)
3386	139	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)
3387	142	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3387	142	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3388	142	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3388	142	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3389	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)
3389	154	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)
3390	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)
3390	154	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)
3391	135	Organometallic substance, solid, pyrophoric
3392	135	Organometallic substance, liquid, pyrophoric
3393	135	Organometallic substance, solid, pyrophoric, water-reactive

ID No.	Guide No.	Name of Material
3394	**135**	Organometallic substance, liquid, pyrophoric, water-reactive
3395	**135**	Organometallic substance, solid, water-reactive
3396	**138**	Organometallic substance, solid, water-reactive, flammable
3397	**138**	Organometallic substance, solid, water-reactive, self-heating
3398	**135**	Organometallic substance, liquid, water-reactive
3399	**138**	Organometallic substance, liquid, water-reactive, flammable
3400	**138**	Organometallic substance, solid, self-heating
3401	**138**	Alkali metal amalgam, solid
3402	**138**	Alkaline earth metal amalgam, solid
3403	**138**	Potassium, metal alloys, solid
3404	**138**	Potassium sodium alloys, solid
3404	**138**	Sodium potassium alloys, solid
3405	**141**	Barium chlorate, solution
3406	**141**	Barium perchlorate, solution
3407	**140**	Chlorate and Magnesium chloride mixture, solution
3407	**140**	Magnesium chloride and Chlorate mixture, solution
3408	**141**	Lead perchlorate, solution
3409	**152**	Chloronitrobenzenes, liquid
3410	**153**	4-Chloro-o-toluidine hydrochloride, solution
3411	**153**	beta-Naphthylamine, solution
3411	**153**	Naphthylamine (beta), solution
3412	**153**	Formic acid, with not less than 5% but less than 10% acid
3412	**153**	Formic acid, with not less than 10% but not more than 85% acid
3413	**157**	Potassium cyanide, solution
3414	**157**	Sodium cyanide, solution
3415	**154**	Sodium fluoride, solution
3416	**153**	Chloroacetophenone, liquid
3416	**153**	CN
3417	**152**	Xylyl bromide, solid
3418	**151**	2,4-Toluenediamine, solution
3418	**151**	2,4-Toluylenediamine, solution
3419	**157**	Boron trifluoride acetic acid complex, solid
3420	**157**	Boron trifluoride propionic acid complex, solid
3421	**154**	Potassium hydrogen difluoride, solution
3422	**154**	Potassium fluoride, solution
3423	**153**	Tetramethylammonium hydroxide, solid
3424	**141**	Ammonium dinitro-o-cresolate, solution
3425	**156**	Bromoacetic acid, solid
3426	**153P**	Acrylamide, solution
3427	**153**	Chlorobenzyl chlorides, solid
3428	**156**	3-Chloro-4-methylphenyl isocyanate, solid
3429	**153**	Chlorotoluidines, liquid
3430	**153**	Xylenols, liquid
3431	**152**	Nitrobenzotrifluorides, solid
3432	**171**	Polychlorinated biphenyls, solid
3433	**135**	Lithium alkyls, solid
3434	**153**	Nitrocresols, liquid
3435	**153**	Hydroquinone, solution

ID No.	Guide No.	Name of Material
3436	151	Hexafluoroacetone hydrate, solid
3437	152	Chlorocresols, solid
3438	153	alpha-Methylbenzyl alcohol, solid
3439	151	Nitriles, poisonous, solid, n.o.s.
3439	151	Nitriles, solid, poisonous, n.o.s.
3439	151	Nitriles, solid, toxic, n.o.s.
3439	151	Nitriles, toxic, solid, n.o.s.
3440	151	Selenium compound, liquid, n.o.s.
3441	153	Chlorodinitrobenzenes, solid
3442	153	Dichloroanilines, solid
3443	152	Dinitrobenzenes, solid
3444	151	Nicotine hydrochloride, solid
3445	151	Nicotine sulfate, solid
3445	151	Nicotine sulphate, solid
3446	152	Nitrotoluenes, solid
3447	152	Nitroxylenes, solid
3448	159	Tear gas substance, solid, n.o.s.
3449	159	Bromobenzyl cyanides, solid
3450	151	Diphenylchloroarsine, solid
3451	153	Toluidines, solid
3452	153	Xylidines, solid
3453	154	Phosphoric acid, solid
3454	152	Dinitrotoluenes, solid
3455	153	Cresols, solid
3456	157	Nitrosylsulfuric acid, solid
3456	157	Nitrosylsulphuric acid, solid
3457	152	Chloronitrotoluenes, solid
3458	152	Nitroanisoles, solid
3459	152	Nitrobromobenzenes, solid
3460	153	N-Ethylbenzyltoluidines, solid
3461	135	Aluminum alkyl halides, solid
3462	153	Toxins, extracted from living sources, solid, n.o.s.
3463	132	Propionic acid, with not less than 90% acid
3464	151	Organophosphorus compound, poisonous, solid, n.o.s.
3464	151	Organophosphorus compound, solid, poisonous, n.o.s.
3464	151	Organophosphorus compound, solid, toxic, n.o.s.
3464	151	Organophosphorus compound, toxic, solid, n.o.s.
3465	151	Organoarsenic compound, solid, n.o.s.
3466	151	Metal carbonyls, solid, n.o.s.
3467	151	Organometallic compound, poisonous, solid, n.o.s.
3467	151	Organometallic compound, solid, poisonous, n.o.s.
3467	151	Organometallic compound, solid, toxic, n.o.s.
3467	151	Organometallic compound, toxic, solid, n.o.s.
3468	115	Hydrogen in a metal hydride storage system
3468	115	Hydrogen in a metal hydride storage system contained in equipment
3468	115	Hydrogen in a metal hydride storage system packed with equipment
3469	132	Paint, flammable, corrosive
3469	132	Paint related material, flammable, corrosive
3470	132	Paint, corrosive, flammable

ID No.	Guide No.	Name of Material
3470	**132**	Paint related material, corrosive, flammable
3471	**154**	Hydrogendifluorides, solution, n.o.s.
3472	**153**	Crotonic acid, liquid
3473	**128**	Fuel cell cartridges, contained in equipment, containing flammable liquids
3473	**128**	Fuel cell cartridges containing flammable liquids
3473	**128**	Fuel cell cartridges packed with equipment, containing flammable liquids
3474	**113**	1-Hydroxybenzotriazole, anhydrous, wetted with not less than 20% water
3474	**113**	1-Hydroxybenzotriazole, monohydrate
3475	**127**	Ethanol and gasoline mixture, with more than 10% ethanol
3475	**127**	Ethanol and motor spirit mixture, with more than 10% ethanol
3475	**127**	Ethanol and petrol mixture, with more than 10% ethanol
3475	**127**	Gasoline and ethanol mixture, with more than 10% ethanol
3475	**127**	Motor spirit and ethanol mixture, with more than 10% ethanol
3475	**127**	Petrol and ethanol mixture, with more than 10% ethanol
3476	**138**	Fuel cell cartridges contained in equipment, containing water-reactive substances
3476	**138**	Fuel cell cartridges, containing water-reactive substances
3476	**138**	Fuel cell cartridges packed with equipment, containing water-reactive substances
3477	**153**	Fuel cell cartridges contained in equipment, containing corrosive substances
3477	**153**	Fuel cell cartridges, containing corrosive substances
3477	**153**	Fuel cell cartridges packed with equipment, containing corrosive substances
3478	**115**	Fuel cell cartridges contained in equipment, containing liquefied flammable gas
3478	**115**	Fuel cell cartridges, containing liquefied flammable gas
3478	**115**	Fuel cell cartridges packed with equipment, containing liquefied flammable gas
3479	**115**	Fuel cell cartridges contained in equipment, containing hydrogen in metal hydride
3479	**115**	Fuel cell cartridges, containing hydrogen in metal hydride
3479	**115**	Fuel cell cartridges packed with equipment, containing hydrogen in metal hydride
3480	**147**	Lithium ion batteries (including lithium ion polymer batteries)
3481	**147**	Lithium ion batteries contained in equipment (including lithium ion polymer batteries)
3481	**147**	Lithium ion batteries packed with equipment (including lithium ion polymer batteries)
3482	**138**	Alkali metal dispersion, flammable
3482	**138**	Alkaline earth metal dispersion, flammable
3483	**131**	Motor fuel anti-knock mixture, flammable
3484	**132**	Hydrazine aqueous solution, flammable, with more than 37% hydrazine, by mass

ID No.	Guide No.	Name of Material
3485	140	Calcium hypochlorite, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)
3485	140	Calcium hypochlorite mixture, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)
3486	140	Calcium hypochlorite mixture, dry, corrosive, with more than 10% but not more than 39% available chlorine
3487	140	Calcium hypochlorite, hydrated, corrosive, with not less than 5.5% but not more than 16% water
3487	140	Calcium hypochlorite, hydrated mixture, corrosive, with not less than 5.5% but not more than 16% water
3488	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3488	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3489	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3489	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3490	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)
3490	155	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)
3491	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)
3491	155	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)

ID No.	Guide No.	Name of Material
3492	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)
3492	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)
3493	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)
3493	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)
3494	131	Petroleum sour crude oil, flammable, poisonous
3494	131	Petroleum sour crude oil, flammable, toxic
3495	154	Iodine
3496	171	Batteries, nickel-metal hydride
3497	133	Krill meal
3498	157	Iodine monochloride, liquid
3499	171	Capacitor, electric double layer
3500	126	Chemical under pressure, n.o.s.
3501	115	Chemical under pressure, flammable, n.o.s.
3502	123	Chemical under pressure, poisonous, n.o.s.
3502	123	Chemical under pressure, toxic, n.o.s.
3503	125	Chemical under pressure, corrosive, n.o.s.
3504	119	Chemical under pressure, flammable, poisonous, n.o.s.
3504	119	Chemical under pressure, flammable, toxic, n.o.s.
3505	118	Chemical under pressure, flammable, corrosive, n.o.s.
3506	172	Mercury contained in manufactured articles

ID No.	Guide No.	Name of Material
3507	**166**	Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted
3508	**171**	Capacitor, asymmetric
3509	**171**	Packaging discarded, empty, uncleaned
3510	**174**	Adsorbed gas, flammable, n.o.s.
3511	**174**	Adsorbed gas, n.o.s.
3512	**173**	Adsorbed gas, poisonous, n.o.s.
3512	**173**	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone A)
3512	**173**	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone B)
3512	**173**	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone C)
3512	**173**	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone D)
3512	**173**	Adsorbed gas, toxic, n.o.s.
3512	**173**	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone A)
3512	**173**	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone B)
3512	**173**	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone C)
3512	**173**	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone D)
3513	**174**	Adsorbed gas, oxidizing, n.o.s.
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s.
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone A)
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone B)
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone C)
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone D)
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s.
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone A)
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone B)
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone C)
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone D)
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s.
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone A)
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone B)
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone C)
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone D)
3515	**173**	Adsorbed gas, toxic, oxidizing, n.o.s.
3515	**173**	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone A)
3515	**173**	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone B)

ID No.	Guide No.	Name of Material
3515	173	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone C)
3515	173	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone D)
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s.
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone A)
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone B)
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone C)
3516	173	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone D)
3516	173	Adsorbed gas, toxic, corrosive, n.o.s.
3516	173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone A)
3516	173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone B)
3516	173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone C)
3516	173	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone D)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s.
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone A)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone B)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone C)
3517	173	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone D)
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s.
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone A)
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone B)
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone C)
3517	173	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone D)
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s.
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone A)
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone B)
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone C)
3518	173	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone D)
3518	173	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s.
3518	173	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone A)
3518	173	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone B)

ID No.	Guide No.	Name of Material
3518	**173**	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone C)
3518	**173**	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone D)
3519	**173**	Boron trifluoride, adsorbed
3520	**173**	Chlorine, adsorbed
3521	**173**	Silicon tetrafluoride, adsorbed
3522	**173**	Arsine, adsorbed
3523	**173**	Germane, adsorbed
3524	**173**	Phosphorus pentafluoride, adsorbed
3525	**173**	Phosphine, adsorbed
3526	**173**	Hydrogen selenide, adsorbed
3527	**128P**	Polyester resin kit, solid base material
3528	**128**	Engine, fuel cell, flammable liquid powered
3528	**128**	Engine, internal combustion flammable liquid powered
3528	**128**	Machinery, fuel cell, flammable liquid powered
3528	**128**	Machinery, internal combustion, flammable liquid powered
3529	**115**	Engine, fuel cell, flammable gas powered
3529	**115**	Engine, internal combustion flammable gas powered
3529	**115**	Machinery, fuel cell, flammable gas powered
3529	**115**	Machinery, internal combustion, flammable gas powered
3530	**171**	Engine, internal combustion
3530	**171**	Machinery, internal combustion
3531	**149P**	Polymerizing substance, solid, stabilized, n.o.s.
3532	**149P**	Polymerizing substance, liquid, stabilized, n.o.s.
3533	**150P**	Polymerizing substance, solid, temperature controlled, n.o.s.
3534	**150P**	Polymerizing substance, liquid, temperature controlled, n.o.s.
8000	**171**	Consumer commodity
9035	**123**	Gas identification set
9191	**143**	Chlorine dioxide, hydrate, frozen
9202	**168**	Carbon monoxide, refrigerated liquid (cryogenic liquid)
9206	**137**	Methyl phosphonic dichloride
9260	**169**	Aluminum, molten
9263	**156**	Chloropivaloyl chloride
9264	**151**	3,5-Dichloro-2,4,6-trifluoropyridine
9269	**132**	Trimethoxysilane
9279	**115**	Hydrogen absorbed in metal hydride

GREEN HIGHLIGHTED ENTRIES IN BLUE PAGES

For entries highlighted in green follow these steps:

- **IF THERE IS NO FIRE**:
  - Go directly to **Table 1** (green-bordered pages)
  - Look up the ID number and name of material
  - Identify initial isolation and protective action distances

- **IF A FIRE IS INVOLVED**:
  - Also consult the assigned orange guide
  - If applicable, apply the evacuation information shown under PUBLIC SAFETY

Note 1: If the name in **Table 1** is shown with ***"(when spilled in water)"***, these materials produce large amounts of Toxic Inhalation Hazard (TIH) (PIH in the US) gases when spilled in water. Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (UN1746), Thionyl chloride (UN1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material **is NOT** a TIH and this material **is NOT** spilled in water, **Table 1** and **Table 2 do NOT** apply and safety distances will be found within the appropriate orange guide.

Note 2: **Explosives** are not individually listed by their name because in an emergency situation, the response will be based only on the division of the explosive, not on the individual explosive.

For divisions 1.1, 1.2, 1.3 and 1.5, refer to GUIDE 112.

For divisions 1.4 and 1.6, refer to GUIDE 114.

Name of Material	Guide No.	ID No.
AC	**117**	1051
Acetal	**127**	1088
Acetaldehyde	**129P**	1089
Acetaldehyde ammonia	**171**	1841
Acetaldehyde oxime	**129**	2332
Acetic acid, glacial	**132**	2789
Acetic acid, solution, more than 10% but not more than 80% acid	**153**	2790
Acetic acid, solution, more than 80% acid	**132**	2789
Acetic anhydride	**137**	1715
Acetone	**127**	1090
Acetone cyanohydrin, stabilized	**155**	1541
Acetone oils	**127**	1091
Acetonitrile	**127**	1648
Acetyl bromide	**156**	1716
Acetyl chloride	**155**	1717
Acetylene, dissolved	**116**	1001
Acetylene, Ethylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene	**115**	3138
Acetylene, solvent free	**116**	3374
Acetylene tetrabromide	**159**	2504
Acetyl iodide	**156**	1898
Acetyl methyl carbinol	**127**	2621
Acid, sludge	**153**	1906
Acid butyl phosphate	**153**	1718
Acridine	**153**	2713
Acrolein, stabilized	**131P**	1092
Acrolein dimer, stabilized	**129P**	2607

Name of Material	Guide No.	ID No.
Acrylamide	**153P**	2074
Acrylamide, solid	**153P**	2074
Acrylamide, solution	**153P**	3426
Acrylic acid, stabilized	**132P**	2218
Acrylonitrile, stabilized	**131P**	1093
Adamsite	**154**	1698
Adhesives (flammable)	**128**	1133
Adiponitrile	**153**	2205
Adsorbed gas, flammable, n.o.s.	**174**	3510
Adsorbed gas, n.o.s.	**174**	3511
Adsorbed gas, oxidizing, n.o.s.	**174**	3513
Adsorbed gas, poisonous, corrosive, n.o.s.	**173**	3516
Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone A)	**173**	3516
Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone B)	**173**	3516
Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone C)	**173**	3516
Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone D)	**173**	3516
Adsorbed gas, poisonous, flammable, corrosive, n.o.s.	**173**	3517
Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone A)	**173**	3517
Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone B)	**173**	3517
Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone C)	**173**	3517

Name of Material	Guide No.	ID No.
Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone D)	173	3517
Adsorbed gas, poisonous, flammable, n.o.s.	173	3514
Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone A)	173	3514
Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone B)	173	3514
Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone C)	173	3514
Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone D)	173	3514
Adsorbed gas, poisonous, n.o.s.	173	3512
Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone A)	173	3512
Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone B)	173	3512
Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone C)	173	3512
Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone D)	173	3512
Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s.	173	3518
Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone A)	173	3518
Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone B)	173	3518
Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone C)	173	3518

Name of Material	Guide No.	ID No.
Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone D)	173	3518
Adsorbed gas, poisonous, oxidizing, n.o.s.	173	3515
Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone A)	173	3515
Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone B)	173	3515
Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone C)	173	3515
Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone D)	173	3515
Adsorbed gas, toxic, corrosive, n.o.s.	173	3516
Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone A)	173	3516
Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone B)	173	3516
Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone C)	173	3516
Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone D)	173	3516
Adsorbed gas, toxic, flammable, corrosive, n.o.s.	173	3517
Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone A)	173	3517
Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone B)	173	3517
Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone C)	173	3517

Name of Material	Guide No.	ID No.
Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone D)	**173**	3517
Adsorbed gas, toxic, flammable, n.o.s.	**173**	3514
Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone A)	**173**	3514
Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone B)	**173**	3514
Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone C)	**173**	3514
Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone D)	**173**	3514
Adsorbed gas, toxic, n.o.s.	**173**	3512
Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone A)	**173**	3512
Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone B)	**173**	3512
Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone C)	**173**	3512
Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone D)	**173**	3512
Adsorbed gas, toxic, oxidizing, corrosive, n.o.s.	**173**	3518
Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone A)	**173**	3518
Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone B)	**173**	3518
Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone C)	**173**	3518
Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone D)	**173**	3518
Adsorbed gas, toxic, oxidizing, n.o.s.	**173**	3515
Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone A)	**173**	3515
Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone B)	**173**	3515
Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone C)	**173**	3515
Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone D)	**173**	3515
Aerosols	**126**	1950
Air, compressed	**122**	1002
Air, refrigerated liquid (cryogenic liquid)	**122**	1003
Air, refrigerated liquid (cryogenic liquid), non-pressurized	**122**	1003
Air bag inflators	**171**	3268
Air bag modules	**171**	3268
Aircraft hydraulic power unit fuel tank	**131**	3165
Alcoholates solution, n.o.s., in alcohol	**132**	3274
Alcoholic beverages	**127**	3065
Alcohols, flammable, poisonous, n.o.s.	**131**	1986
Alcohols, flammable, toxic, n.o.s.	**131**	1986
Alcohols, n.o.s.	**127**	1987
Aldehydes, flammable, poisonous, n.o.s.	**131**	1988
Aldehydes, flammable, toxic, n.o.s.	**131**	1988
Aldehydes, n.o.s.	**129**	1989
Aldol	**153**	2839
Alkali metal alcoholates, self-heating, corrosive, n.o.s.	**136**	3206

Name of Material	Guide No.	ID No.
Alkali metal alloy, liquid, n.o.s.	**138**	1421
Alkali metal amalgam	**138**	1389
Alkali metal amalgam, liquid	**138**	1389
Alkali metal amalgam, solid	**138**	3401
Alkali metal amides	**139**	1390
Alkali metal dispersion	**138**	1391
Alkali metal dispersion, flammable	**138**	3482
Alkaline earth metal alcoholates, n.o.s.	**135**	3205
Alkaline earth metal alloy, n.o.s.	**138**	1393
Alkaline earth metal amalgam	**138**	1392
Alkaline earth metal amalgam, liquid	**138**	1392
Alkaline earth metal amalgam, solid	**138**	3402
Alkaline earth metal dispersion	**138**	1391
Alkaline earth metal dispersion, flammable	**138**	3482
Alkaloids, liquid, n.o.s. (poisonous)	**151**	3140
Alkaloids, solid, n.o.s. (poisonous)	**151**	1544
Alkaloid salts, liquid, n.o.s. (poisonous)	**151**	3140
Alkaloid salts, solid, n.o.s. (poisonous)	**151**	1544
Alkylphenols, liquid, n.o.s. (including C2-C12 homologues)	**153**	3145
Alkylphenols, solid, n.o.s. (including C2-C12 homologues)	**153**	2430
Alkyl sulfonic acids, liquid, with more than 5% free Sulfuric acid	**153**	2584
Alkyl sulfonic acids, liquid, with not more than 5% free Sulfuric acid	**153**	2586
Alkyl sulfonic acids, solid, with more than 5% free Sulfuric acid	**153**	2583
Alkyl sulfonic acids, solid, with not more than 5% free Sulfuric acid	**153**	2585
Alkylsulfuric acids	**156**	2571
Alkyl sulphonic acids, liquid, with more than 5% free Sulphuric acid	**153**	2584
Alkyl sulphonic acids, liquid, with not more than 5% free Sulphuric acid	**153**	2586
Alkyl sulphonic acids, solid, with more than 5% free Sulphuric acid	**153**	2583
Alkyl sulphonic acids, solid, with not more than 5% free Sulphuric acid	**153**	2585
Alkylsulphuric acids	**156**	2571
Allyl acetate	**131**	2333
Allyl alcohol	**131**	1098
Allylamine	**131**	2334
Allyl bromide	**131**	1099
Allyl chloride	**131**	1100
Allyl chlorocarbonate	**155**	1722
Allyl chloroformate	**155**	1722
Allyl ethyl ether	**131**	2335
Allyl formate	**131**	2336
Allyl glycidyl ether	**129**	2219
Allyl iodide	**132**	1723
Allyl isothiocyanate, stabilized	**155**	1545
Allyltrichlorosilane, stabilized	**155**	1724
Aluminum, molten	**169**	9260
Aluminum alkyl halides, liquid	**135**	3052

Name of Material	Guide No.	ID No.
Aluminum alkyl halides, solid	135	3052
Aluminum alkyl halides, solid	135	3461
Aluminum alkyl hydrides	138	3076
Aluminum alkyls	135	3051
Aluminum borohydride	135	2870
Aluminum borohydride in devices	135	2870
Aluminum bromide, anhydrous	137	1725
Aluminum bromide, solution	154	2580
Aluminum carbide	138	1394
Aluminum chloride, anhydrous	137	1726
Aluminum chloride, solution	154	2581
Aluminum dross	138	3170
Aluminum ferrosilicon powder	139	1395
Aluminum hydride	138	2463
Aluminum nitrate	140	1438
Aluminum phosphide	139	1397
Aluminum phosphide pesticide	157	3048
Aluminum powder, coated	170	1309
Aluminum powder, pyrophoric	135	1383
Aluminum powder, uncoated	138	1396
Aluminum remelting by-products	138	3170
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Amines, flammable, corrosive, n.o.s.	132	2733
Amines, liquid, corrosive, flammable, n.o.s.	132	2734
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2-Amino-4-chlorophenol	151	2673
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2-Amino-4,6-dinitrophenol, wetted with not less than 20% water	113	3317
2-(2-Aminoethoxy)ethanol	154	3055
N-Aminoethylpiperazine	153	2815
Aminophenols	152	2512
Aminopyridines	153	2671
Ammonia, anhydrous	125	1005
Ammonia, solution, with more than 10% but not more than 35% Ammonia	154	2672
Ammonia, solution, with more than 35% but not more than 50% Ammonia	125	2073
Ammonia solution, with more than 50% Ammonia	125	3318
Ammonium arsenate	151	1546
Ammonium bifluoride, solid	154	1727
Ammonium bifluoride, solution	154	2817
Ammonium dichromate	141	1439
Ammonium dinitro-o-cresolate	141	1843
Ammonium dinitro-o-cresolate, solid	141	1843
Ammonium dinitro-o-cresolate, solution	141	3424
Ammonium fluoride	154	2505
Ammonium fluorosilicate	151	2854
Ammonium hydrogendifluoride, solid	154	1727
Ammonium hydrogendifluoride, solution	154	2817
Ammonium hydrogen sulfate	154	2506
Ammonium hydrogen sulphate	154	2506
Ammonium hydroxide	154	2672

Name of Material	Guide No.	ID No.
Ammonium hydroxide, with more than 10% but not more than 35% Ammonia	**154**	2672
Ammonium metavanadate	**154**	2859
Ammonium nitrate, liquid (hot concentrated solution)	**140**	2426
Ammonium nitrate, with not more than 0.2% combustible substances	**140**	1942
Ammonium nitrate based fertilizer	**140**	2067
Ammonium nitrate based fertilizer	**140**	2071
Ammonium nitrate emulsion	**140**	3375
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Ammonium nitrate fertilizers, with Ammonium sulfate	**140**	2069
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Ammonium nitrate fertilizers, with Calcium carbonate	**140**	2068
Ammonium nitrate fertilizers, with Phosphate or Potash	**143**	2070
Ammonium nitrate-fuel oil mixtures	**112**	——
Ammonium nitrate gel	**140**	3375
Ammonium nitrate suspension	**140**	3375
Ammonium perchlorate	**143**	1442
Ammonium persulfate	**140**	1444
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Ammonium picrate, wetted with not less than 10% water	**113**	1310
Ammonium polysulfide, solution	**154**	2818
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Ammonium polyvanadate	**151**	2861
Ammonium silicofluoride	**151**	2854
Ammonium sulfide, solution	**132**	2683
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Ammunition, poisonous, non-explosive	**151**	2016
Ammunition, tear-producing, non-explosive	**159**	2017
Ammunition, toxic, non-explosive	**151**	2016
Amyl acetates	**129**	1104
Amyl acid phosphate	**153**	2819
Amylamine	**132**	1106
Amyl butyrates	**130**	2620
Amyl chloride	**129**	1107
n-Amylene	**128**	1108
Amyl formates	**129**	1109
Amyl mercaptan	**130**	1111
n-Amyl methyl ketone	**127**	1110
Amyl nitrate	**140**	1112
Amyl nitrite	**129**	1113
Amyltrichlorosilane	**155**	1728
Anhydrous ammonia	**125**	1005
Aniline	**153**	1547
Aniline hydrochloride	**153**	1548
Anisidines	**153**	2431
Anisidines, liquid	**153**	2431
Anisidines, solid	**153**	2431
Anisole	**128**	2222
Anisoyl chloride	**156**	1729
Antimony compound, inorganic, liquid, n.o.s.	**157**	3141
Antimony compound, inorganic, solid, n.o.s.	**157**	1549
Antimony lactate	**151**	1550

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Antimony pentachloride, liquid	**157**	1730
Antimony pentachloride, solution	**157**	1731
Antimony pentafluoride	**157**	1732
Antimony potassium tartrate	**151**	1551
Antimony powder	**170**	2871
Antimony trichloride	**157**	1733
Antimony trichloride, liquid	**157**	1733
Antimony trichloride, solid	**157**	1733
Aqua regia	**157**	1798
Argon	**121**	1006
Argon, compressed	**121**	1006
Argon, refrigerated liquid (cryogenic liquid)	**120**	1951
Arsenic	**152**	1558
Arsenic acid, liquid	**154**	1553
Arsenic acid, solid	**154**	1554
Arsenical dust	**152**	1562
Arsenical pesticide, liquid, flammable, poisonous	**131**	2760
Arsenical pesticide, liquid, flammable, toxic	**131**	2760
Arsenical pesticide, liquid, poisonous	**151**	2994
Arsenical pesticide, liquid, poisonous, flammable	**131**	2993
Arsenical pesticide, liquid, toxic	**151**	2994
Arsenical pesticide, liquid, toxic, flammable	**131**	2993
Arsenical pesticide, solid, poisonous	**151**	2759
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Arsenic bromide	**151**	1555
Arsenic chloride	**157**	1560

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Arsenic compound, liquid, n.o.s., inorganic	**152**	1556
Arsenic compound, solid, n.o.s.	**152**	1557
Arsenic compound, solid, n.o.s., inorganic	**152**	1557
Arsenic pentoxide	**151**	1559
Arsenic trichloride	**157**	1560
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Arsine	**119**	2188
Arsine, adsorbed	**173**	3522
Articles containing Polychlorinated biphenyls (PCB)	**171**	2315
Articles, pressurized, hydraulic (containing non-flammable gas)	**126**	3164
Articles, pressurized, pneumatic (containing non-flammable gas)	**126**	3164
Aryl sulfonic acids, liquid, with more than 5% free Sulfuric acid	**153**	2584
Aryl sulfonic acids, liquid, with not more than 5% free Sulfuric acid	**153**	2586
Aryl sulfonic acids, solid, with more than 5% free Sulfuric acid	**153**	2583
Aryl sulfonic acids, solid, with not more than 5% free Sulfuric acid	**153**	2585
Aryl sulphonic acids, liquid, with more than 5% free Sulphuric acid	**153**	2584

Name of Material	Guide No.	ID No.
Aryl sulphonic acids, liquid, with not more than 5% free Sulphuric acid	**153**	2586
Aryl sulphonic acids, solid, with more than 5% free Sulphuric acid	**153**	2583
Aryl sulphonic acids, solid, with not more than 5% free Sulphuric acid	**153**	2585
Asbestos	**171**	2212
Asbestos, amphibole	**171**	2212
Asbestos, blue	**171**	2212
Asbestos, brown	**171**	2212
Asbestos, chrysotile	**171**	2590
Asbestos, white	**171**	2590
Asphalt	**130**	1999
Asphalt, cut back	**130**	1999
Aviation regulated liquid, n.o.s.	**171**	3334
Aviation regulated solid, n.o.s.	**171**	3335
Azodicarbonamide	**149**	3242
Barium	**138**	1400
Barium alloys, pyrophoric	**135**	1854
Barium azide, wetted with not less than 50% water	**113**	1571
Barium bromate	**141**	2719
Barium chlorate	**141**	1445
Barium chlorate, solid	**141**	1445
Barium chlorate, solution	**141**	3405
Barium compound, n.o.s.	**154**	1564
Barium cyanide	**157**	1565
Barium hypochlorite, with more than 22% available Chlorine	**141**	2741
Barium nitrate	**141**	1446
Barium oxide	**157**	1884

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Barium perchlorate	**141**	1447
Barium perchlorate, solid	**141**	1447
Barium perchlorate, solution	**141**	3406
Barium permanganate	**141**	1448
Barium peroxide	**141**	1449
Batteries, containing Sodium	**138**	3292
Batteries, dry, containing Potassium hydroxide solid	**154**	3028
Batteries, nickel-metal hydride	**171**	3496
Batteries, wet, filled with acid	**154**	2794
Batteries, wet, filled with alkali	**154**	2795
Batteries, wet, non-spillable	**154**	2800
Battery fluid, acid	**157**	2796
Battery fluid, alkali	**154**	2797
Battery-powered equipment (wet battery)	**154**	3171
Battery-powered equipment (with lithium ion batteries)	**147**	3171
Battery-powered equipment (with lithium metal batteries)	**138**	3171
Battery-powered equipment (with sodium batteries)	**138**	3171
Battery-powered vehicle (wet battery)	**154**	3171
Battery-powered vehicle (with lithium ion batteries)	**147**	3171
Battery-powered vehicle (with sodium batteries)	**138**	3171
Benzaldehyde	**129**	1990
Benzene	**130**	1114
Benzene phosphorus dichloride	**137**	2798
Benzene phosphorus thiodichloride	**137**	2799
Benzenesulfonyl chloride	**156**	2225

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Benzenesulphonyl chloride	**156**	2225
Benzidine	**153**	1885
Benzonitrile	**152**	2224
Benzoquinone	**153**	2587
Benzotrichloride	**156**	2226
Benzotrifluoride	**127**	2338
Benzoyl chloride	**137**	1736
Benzyl bromide	**156**	1737
Benzyl chloride	**156**	1738
Benzyl chloroformate	**137**	1739
Benzyldimethylamine	**132**	2619
Benzylidene chloride	**156**	1886
Benzyl iodide	**156**	2653
Beryllium compound, n.o.s.	**154**	1566
Beryllium nitrate	**141**	2464
Beryllium powder	**134**	1567
Bhusa, wet, damp or contaminated with oil	**133**	1327
Bicyclo[2.2.1]hepta-2,5-diene, stabilized	**128P**	2251
Biological agents	**158**	——
Biological substance, category B	**158**	3373
(Bio)Medical waste, n.o.s.	**158**	3291
Bipyridilium pesticide, liquid, flammable, poisonous	**131**	2782
Bipyridilium pesticide, liquid, flammable, toxic	**131**	2782
Bipyridilium pesticide, liquid, poisonous	**151**	3016
Bipyridilium pesticide, liquid, poisonous, flammable	**131**	3015
Bipyridilium pesticide, liquid, toxic	**151**	3016
Bipyridilium pesticide, liquid, toxic, flammable	**131**	3015
Bipyridilium pesticide, solid, poisonous	**151**	2781
Bipyridilium pesticide, solid, toxic	**151**	2781
Bisulfates, aqueous solution	**154**	2837
Bisulfites, aqueous solution, n.o.s.	**154**	2693
Bisulphates, aqueous solution	**154**	2837
Bisulphites, aqueous solution, n.o.s.	**154**	2693
Blasting agent, n.o.s.	**112**	——
Bleaching powder	**140**	2208
Blue asbestos	**171**	2212
Bombs, smoke, non-explosive, with corrosive liquid, without initiating device	**153**	2028
Borate and Chlorate mixture	**140**	1458
Borneol	**133**	1312
Boron tribromide	**157**	2692
Boron trichloride	**125**	1741
Boron trifluoride	**125**	1008
Boron trifluoride, adsorbed	**173**	3519
Boron trifluoride, compressed	**125**	1008
Boron trifluoride, dihydrate	**157**	2851
Boron trifluoride acetic acid complex	**157**	1742
Boron trifluoride acetic acid complex, liquid	**157**	1742
Boron trifluoride acetic acid complex, solid	**157**	3419
Boron trifluoride diethyl etherate	**132**	2604
Boron trifluoride dimethyl etherate	**139**	2965

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Boron trifluoride propionic acid complex	**157**	1743
Boron trifluoride propionic acid complex, liquid	**157**	1743
Boron trifluoride propionic acid complex, solid	**157**	3420
Bromates, inorganic, aqueous solution, n.o.s.	**140**	3213
Bromates, inorganic, n.o.s.	**141**	1450
Bromine	**154**	1744
Bromine, solution	**154**	1744
Bromine, solution (Inhalation Hazard Zone A)	**154**	1744
Bromine, solution (Inhalation Hazard Zone B)	**154**	1744
Bromine chloride	**124**	2901
Bromine pentafluoride	**144**	1745
Bromine trifluoride	**144**	1746
Bromoacetic acid	**156**	1938
Bromoacetic acid, solid	**156**	3425
Bromoacetic acid, solution	**156**	1938
Bromoacetone	**131**	1569
Bromoacetyl bromide	**156**	2513
Bromobenzene	**130**	2514
Bromobenzyl cyanides, liquid	**159**	1694
Bromobenzyl cyanides, solid	**159**	1694
Bromobenzyl cyanides, solid	**159**	3449
1-Bromobutane	**130**	1126
2-Bromobutane	**130**	2339
Bromochloromethane	**160**	1887
1-Bromo-3-chloropropane	**159**	2688
2-Bromoethyl ethyl ether	**130**	2340
Bromoform	**159**	2515
1-Bromo-3-methylbutane	**130**	2341

Name of Material	Guide No.	ID No.
Bromomethylpropanes	**130**	2342
2-Bromo-2-nitropropane-1,3-diol	**133**	3241
2-Bromopentane	**130**	2343
Bromopropanes	**129**	2344
3-Bromopropyne	**130**	2345
Bromotrifluoroethylene	**116**	2419
Bromotrifluoromethane	**126**	1009
Brown asbestos	**171**	2212
Brucine	**152**	1570
Butadienes, stabilized	**116P**	1010
Butadienes and hydrocarbon mixture, stabilized	**116P**	1010
Butane	**115**	1011
Butane	**115**	1075
Butanedione	**127**	2346
Butanols	**129**	1120
Butyl acetates	**129**	1123
Butyl acid phosphate	**153**	1718
Butyl acrylates, stabilized	**129P**	2348
n-Butylamine	**132**	1125
N-Butylaniline	**153**	2738
Butylbenzenes	**128**	2709
n-Butyl bromide	**130**	1126
n-Butyl chloride	**130**	1127
n-Butyl chloroformate	**155**	2743
sec-Butyl chloroformate	**155**	2742
tert-Butylcyclohexyl chloroformate	**156**	2747
Butylene	**115**	1012
Butylene	**115**	1075
1,2-Butylene oxide, stabilized	**127P**	3022
Butyl ethers	**128**	1149
n-Butyl formate	**129**	1128

Name of Material	Guide No.	ID No.
tert-Butyl hypochlorite	**135**	3255
N,n-Butylimidazole	**152**	2690
n-Butyl isocyanate	**155**	2485
tert-Butyl isocyanate	**155**	2484
Butyl mercaptan	**130**	2347
n-Butyl methacrylate, stabilized	**130P**	2227
Butyl methyl ether	**127**	2350
Butyl nitrites	**129**	2351
Butyl propionates	**130**	1914
Butyltoluenes	**152**	2667
Butyltrichlorosilane	**155**	1747
5-tert-Butyl-2,4,6-trinitro-m-xylene	**149**	2956
Butyl vinyl ether, stabilized	**127P**	2352
1,4-Butynediol	**153**	2716
Butyraldehyde	**129**	1129
Butyraldoxime	**129**	2840
Butyric acid	**153**	2820
Butyric anhydride	**156**	2739
Butyronitrile	**131**	2411
Butyryl chloride	**132**	2353
Buzz	**153**	2810
BZ	**153**	2810
CA	**159**	1694
Cacodylic acid	**151**	1572
Cadmium compound	**154**	2570
Caesium	**138**	1407
Caesium hydroxide	**157**	2682
Caesium hydroxide, solution	**154**	2681
Caesium nitrate	**140**	1451
Calcium	**138**	1401

Name of Material	Guide No.	ID No.
Calcium, pyrophoric	**135**	1855
Calcium alloys, pyrophoric	**135**	1855
Calcium arsenate	**151**	1573
Calcium arsenate and Calcium arsenite mixture, solid	**151**	1574
Calcium arsenite and Calcium arsenate mixture, solid	**151**	1574
Calcium carbide	**138**	1402
Calcium chlorate	**140**	1452
Calcium chlorate, aqueous solution	**140**	2429
Calcium chlorite	**140**	1453
Calcium cyanamide, with more than 0.1% Calcium carbide	**138**	1403
Calcium cyanide	**157**	1575
Calcium dithionite	**135**	1923
Calcium hydride	**138**	1404
Calcium hydrosulfite	**135**	1923
Calcium hydrosulphite	**135**	1923
Calcium hypochlorite, dry	**140**	1748
Calcium hypochlorite, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)	**140**	3485
Calcium hypochlorite, hydrated, corrosive, with not less than 5.5% but not more than 16% water	**140**	3487
Calcium hypochlorite, hydrated, with not less than 5.5% but not more than 16% water	**140**	2880
Calcium hypochlorite, hydrated mixture, corrosive, with not less than 5.5% but not more than 16% water	**140**	3487
Calcium hypochlorite, hydrated mixture, with not less than 5.5% but not more than 16% water	**140**	2880

Name of Material	Guide No.	ID No.
Calcium hypochlorite mixture, dry, corrosive, with more than 10% but not more than 39% available chlorine	**140**	3486
Calcium hypochlorite mixture, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)	**140**	3485
Calcium hypochlorite mixture, dry, with more than 10% but not more than 39% available Chlorine	**140**	2208
Calcium hypochlorite mixture, dry, with more than 39% available Chlorine (8.8% available Oxygen)	**140**	1748
Calcium manganese silicon	**138**	2844
Calcium nitrate	**140**	1454
Calcium oxide	**157**	1910
Calcium perchlorate	**140**	1455
Calcium permanganate	**140**	1456
Calcium peroxide	**140**	1457
Calcium phosphide	**139**	1360
Calcium resinate	**133**	1313
Calcium resinate, fused	**133**	1314
Calcium silicide	**138**	1405
Camphor	**133**	2717
Camphor, synthetic	**133**	2717
Camphor oil	**128**	1130
Capacitor, asymmetric	**171**	3508
Capacitor, electric double layer	**171**	3499
Caproic acid	**153**	2829
Carbamate pesticide, liquid, flammable, poisonous	**131**	2758
Carbamate pesticide, liquid, flammable, toxic	**131**	2758
Carbamate pesticide, liquid, poisonous	**151**	2992
Carbamate pesticide, liquid, poisonous, flammable	**131**	2991
Carbamate pesticide, liquid, toxic	**151**	2992
Carbamate pesticide, liquid, toxic, flammable	**131**	2991
Carbamate pesticide, solid, poisonous	**151**	2757
Carbamate pesticide, solid, toxic	**151**	2757
Carbon, activated	**133**	1362
Carbon, animal or vegetable origin	**133**	1361
Carbon bisulfide	**131**	1131
Carbon bisulphide	**131**	1131
Carbon dioxide	**120**	1013
Carbon dioxide, compressed	**120**	1013
Carbon dioxide, refrigerated liquid	**120**	2187
Carbon dioxide, solid	**120**	1845
Carbon dioxide and Ethylene oxide mixture, with more than 9% but not more than 87% Ethylene oxide	**115**	1041
Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide	**119P**	3300
Carbon dioxide and Ethylene oxide mixtures, with not more than 9% Ethylene oxide	**126**	1952
Carbon dioxide and Nitrous oxide mixture	**126**	1015
Carbon dioxide and Oxygen mixture, compressed	**122**	1014
Carbon disulfide	**131**	1131
Carbon disulphide	**131**	1131
Carbon monoxide	**119**	1016

Name of Material	Guide No.	ID No.
Carbon monoxide, compressed	119	1016
Carbon monoxide, refrigerated liquid (cryogenic liquid)	168	9202
Carbon monoxide and Hydrogen mixture, compressed	119	2600
Carbon tetrabromide	151	2516
Carbon tetrachloride	151	1846
Carbonyl fluoride	125	2417
Carbonyl fluoride, compressed	125	2417
Carbonyl sulfide	119	2204
Carbonyl sulphide	119	2204
Castor beans, meal, pomace or flake	171	2969
Caustic alkali liquid, n.o.s.	154	1719
Caustic potash, solid	154	1813
Caustic potash, solution	154	1814
Caustic soda, solid	154	1823
Caustic soda, solution	154	1824
Cells, containing Sodium	138	3292
Celluloid, in blocks, rods, rolls, sheets, tubes, etc., except scrap	133	2000
Celluloid, scrap	135	2002
Cerium, slabs, ingots or rods	170	1333
Cerium, turnings or gritty powder	138	3078
Cesium	138	1407
Cesium hydroxide	157	2682
Cesium hydroxide, solution	154	2681
Cesium nitrate	140	1451
CG	125	1076
Charcoal	133	1361
Chemical kit	154	1760
Chemical kit	171	3316
Chemical sample, poisonous	151	3315
Chemical sample, toxic	151	3315
Chemical under pressure, corrosive, n.o.s.	125	3503
Chemical under pressure, flammable, corrosive, n.o.s.	118	3505
Chemical under pressure, flammable, n.o.s.	115	3501
Chemical under pressure, flammable, poisonous, n.o.s.	119	3504
Chemical under pressure, flammable, toxic, n.o.s.	119	3504
Chemical under pressure, n.o.s.	126	3500
Chemical under pressure, poisonous, n.o.s.	123	3502
Chemical under pressure, toxic, n.o.s.	123	3502
Chloral, anhydrous, stabilized	153	2075
Chlorate and Borate mixture	140	1458
Chlorate and Magnesium chloride mixture	140	1459
Chlorate and Magnesium chloride mixture, solid	140	1459
Chlorate and Magnesium chloride mixture, solution	140	3407
Chlorates, inorganic, aqueous solution, n.o.s.	140	3210
Chlorates, inorganic, n.o.s.	140	1461
Chloric acid, aqueous solution, with not more than 10% Chloric acid	140	2626
Chlorine	124	1017
Chlorine, adsorbed	173	3520
Chlorine dioxide, hydrate, frozen	143	9191

Name of Material	Guide No.	ID No.
Chlorine pentafluoride	**124**	2548
Chlorine trifluoride	**124**	1749
Chlorite solution	**154**	1908
Chlorites, inorganic, n.o.s.	**143**	1462
Chloroacetaldehyde	**153**	2232
Chloroacetic acid, molten	**153**	3250
Chloroacetic acid, solid	**153**	1751
Chloroacetic acid, solution	**153**	1750
Chloroacetone, stabilized	**131**	1695
Chloroacetonitrile	**131**	2668
Chloroacetophenone	**153**	1697
Chloroacetophenone, liquid	**153**	3416
Chloroacetophenone, solid	**153**	1697
Chloroacetyl chloride	**156**	1752
Chloroanilines, liquid	**152**	2019
Chloroanilines, solid	**152**	2018
Chloroanisidines	**152**	2233
Chlorobenzene	**130**	1134
Chlorobenzotrifluorides	**130**	2234
Chlorobenzyl chlorides	**153**	2235
Chlorobenzyl chlorides, liquid	**153**	2235
Chlorobenzyl chlorides, solid	**153**	3427
Chlorobutanes	**130**	1127
Chlorocresols	**152**	2669
Chlorocresols, solid	**152**	3437
Chlorocresols, solution	**152**	2669
Chlorodifluorobromomethane	**126**	1974
1-Chloro-1,1-difluoroethane	**115**	2517
Chlorodifluoromethane	**126**	1018
Chlorodifluoromethane and Chloropentafluoroethane mixture	**126**	1973
Chlorodinitrobenzenes, liquid	**153**	1577
Chlorodinitrobenzenes, solid	**153**	1577
Chlorodinitrobenzenes, solid	**153**	3441
1-Chloro-2,3-epoxypropane	**131P**	2023
2-Chloroethanal	**153**	2232
Chloroform	**151**	1888
Chloroformates, poisonous, corrosive, flammable, n.o.s.	**155**	2742
Chloroformates, poisonous, corrosive, n.o.s.	**154**	3277
Chloroformates, toxic, corrosive, flammable, n.o.s.	**155**	2742
Chloroformates, toxic, corrosive, n.o.s.	**154**	3277
Chloromethyl chloroformate	**157**	2745
Chloromethyl ethyl ether	**131**	2354
3-Chloro-4-methylphenyl isocyanate	**156**	2236
3-Chloro-4-methylphenyl isocyanate, liquid	**156**	2236
3-Chloro-4-methylphenyl isocyanate, solid	**156**	3428
Chloronitroanilines	**153**	2237
Chloronitrobenzenes	**152**	1578
Chloronitrobenzenes, liquid	**152**	3409
Chloronitrobenzenes, solid	**152**	1578
Chloronitrotoluenes, liquid	**152**	2433
Chloronitrotoluenes, solid	**152**	2433
Chloronitrotoluenes, solid	**152**	3457
Chloropentafluoroethane	**126**	1020
Chloropentafluoroethane and Chlorodifluoromethane mixture	**126**	1973
Chlorophenolates, liquid	**154**	2904
Chlorophenolates, solid	**154**	2905
Chlorophenols, liquid	**153**	2021
Chlorophenols, solid	**153**	2020

Name of Material	Guide No.	ID No.
Chlorophenyltrichlorosilane	156	1753
Chloropicrin	154	1580
Chloropicrin and Methyl bromide mixture	123	1581
Chloropicrin and Methyl chloride mixture	119	1582
Chloropicrin mixture, n.o.s.	154	1583
Chloropivaloyl chloride	156	9263
Chloroplatinic acid, solid	154	2507
Chloroprene, stabilized	131P	1991
1-Chloropropane	129	1278
2-Chloropropane	129	2356
3-Chloropropanol-1	153	2849
2-Chloropropene	130P	2456
2-Chloropropionic acid	153	2511
2-Chloropropionic acid, solid	153	2511
2-Chloropropionic acid, solution	153	2511
2-Chloropyridine	153	2822
Chlorosilanes, corrosive, flammable, n.o.s.	155	2986
Chlorosilanes, corrosive, n.o.s.	156	2987
Chlorosilanes, flammable, corrosive, n.o.s.	155	2985
Chlorosilanes, poisonous, corrosive, flammable, n.o.s.	155	3362
Chlorosilanes, poisonous, corrosive, n.o.s.	156	3361
Chlorosilanes, toxic, corrosive, flammable, n.o.s.	155	3362
Chlorosilanes, toxic, corrosive, n.o.s.	156	3361
Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	139	2988

Name of Material	Guide No.	ID No.
Chlorosulfonic acid (with or without sulfur trioxide mixture)	137	1754
Chlorosulphonic acid (with or without sulphur trioxide mixture)	137	1754
1-Chloro-1,2,2,2-tetrafluoroethane	126	1021
Chlorotetrafluoroethane and Ethylene oxide mixture, with not more than 8.8% Ethylene oxide	126	3297
Chlorotoluenes	129	2238
4-Chloro-o-toluidine hydrochloride	153	1579
4-Chloro-o-toluidine hydrochloride, solid	153	1579
4-Chloro-o-toluidine hydrochloride, solution	153	3410
Chlorotoluidines	153	2239
Chlorotoluidines, liquid	153	3429
Chlorotoluidines, solid	153	2239
1-Chloro-2,2,2-trifluoroethane	126	1983
Chlorotrifluoromethane	126	1022
Chlorotrifluoromethane and Trifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane	126	2599
Chromic acid, solution	154	1755
Chromic fluoride, solid	154	1756
Chromic fluoride, solution	154	1757
Chromium nitrate	141	2720
Chromium oxychloride	137	1758
Chromium trioxide, anhydrous	141	1463
Chromosulfuric acid	154	2240
Chromosulphuric acid	154	2240
CK	125	1589

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Clinical waste, unspecified, n.o.s.	**158**	3291
CN	**153**	1697
CN	**153**	3416
Coal gas	**119**	1023
Coal gas, compressed	**119**	1023
Coal tar distillates, flammable	**128**	1136
Coating solution	**127**	1139
Cobalt naphthenates, powder	**133**	2001
Cobalt resinate, precipitated	**133**	1318
Combustible liquid, n.o.s.	**128**	1993
Compounds, cleaning liquid (corrosive)	**154**	1760
Compounds, cleaning liquid (flammable)	**128**	1993
Compounds, tree or weed killing, liquid (corrosive)	**154**	1760
Compounds, tree or weed killing, liquid (flammable)	**128**	1993
Compounds, tree or weed killing, liquid (toxic)	**153**	2810
Compressed gas, flammable, n.o.s.	**115**	1954
Compressed gas, n.o.s.	**126**	1956
Compressed gas, oxidizing, n.o.s.	**122**	3156
Compressed gas, poisonous, corrosive, n.o.s.	**123**	3304
Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	**123**	3304
Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	**123**	3304
Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	**123**	3304
Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	**123**	3304
Compressed gas, poisonous, flammable, corrosive, n.o.s.	**119**	3305
Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	**119**	3305
Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	**119**	3305
Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	**119**	3305
Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	**119**	3305
Compressed gas, poisonous, flammable, n.o.s.	**119**	1953
Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	**119**	1953
Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	**119**	1953
Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	**119**	1953
Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	**119**	1953
Compressed gas, poisonous, n.o.s.	**123**	1955
Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	**123**	1955
Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	**123**	1955
Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	**123**	1955

Name of Material	Guide No.	ID No.
Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	**123**	1955
Compressed gas, poisonous, oxidizing, corrosive, n.o.s.	**124**	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	**124**	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	**124**	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	**124**	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	**124**	3306
Compressed gas, poisonous, oxidizing, n.o.s.	**124**	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)	**124**	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	**124**	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	**124**	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	**124**	3303
Compressed gas, toxic, corrosive, n.o.s.	**123**	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	**123**	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	**123**	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	**123**	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	**123**	3304
Compressed gas, toxic, flammable, corrosive, n.o.s.	**119**	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	**119**	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	**119**	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	**119**	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	**119**	3305
Compressed gas, toxic, flammable, n.o.s.	**119**	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	**119**	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	**119**	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	**119**	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	**119**	1953
Compressed gas, toxic, n.o.s.	**123**	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)	**123**	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)	**123**	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone C)	**123**	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)	**123**	1955
Compressed gas, toxic, oxidizing, corrosive, n.o.s.	**124**	3306

Name of Material	Guide No.	ID No.
Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	**124**	3306
Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	**124**	3306
Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	**124**	3306
Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	**124**	3306
Compressed gas, toxic, oxidizing, n.o.s.	**124**	3303
Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	**124**	3303
Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	**124**	3303
Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	**124**	3303
Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	**124**	3303
Compressed gas and hexaethyl tetraphosphate mixture	**123**	1612
Consumer commodity	**171**	8000
Copper acetoarsenite	**151**	1585
Copper arsenite	**151**	1586
Copper based pesticide, liquid, flammable, poisonous	**131**	2776
Copper based pesticide, liquid, flammable, toxic	**131**	2776
Copper based pesticide, liquid, poisonous	**151**	3010
Copper based pesticide, liquid, poisonous, flammable	**131**	3009
Copper based pesticide, liquid, toxic	**151**	3010
Copper based pesticide, liquid, toxic, flammable	**131**	3009
Copper based pesticide, solid, poisonous	**151**	2775
Copper based pesticide, solid, toxic	**151**	2775
Copper chlorate	**141**	2721
Copper chloride	**154**	2802
Copper cyanide	**151**	1587
Copra	**135**	1363
Corrosive liquid, acidic, inorganic, n.o.s.	**154**	3264
Corrosive liquid, acidic, organic, n.o.s.	**153**	3265
Corrosive liquid, basic, inorganic, n.o.s.	**154**	3266
Corrosive liquid, basic, organic, n.o.s.	**153**	3267
Corrosive liquid, flammable, n.o.s.	**132**	2920
Corrosive liquid, n.o.s.	**154**	1760
Corrosive liquid, oxidizing, n.o.s.	**140**	3093
Corrosive liquid, poisonous, n.o.s.	**154**	2922
Corrosive liquid, self-heating, n.o.s.	**136**	3301
Corrosive liquid, toxic, n.o.s.	**154**	2922
Corrosive liquid, water-reactive, n.o.s.	**138**	3094
Corrosive solid, acidic, inorganic, n.o.s.	**154**	3260
Corrosive solid, acidic, organic, n.o.s.	**154**	3261
Corrosive solid, basic, inorganic, n.o.s.	**154**	3262

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Corrosive solid, basic, organic, n.o.s.	**154**	3263
Corrosive solid, flammable, n.o.s.	**134**	2921
Corrosive solid, n.o.s.	**154**	1759
Corrosive solid, oxidizing, n.o.s.	**140**	3084
Corrosive solid, poisonous, n.o.s.	**154**	2923
Corrosive solid, self-heating, n.o.s.	**136**	3095
Corrosive solid, toxic, n.o.s.	**154**	2923
Corrosive solid, water-reactive, n.o.s.	**138**	3096
Cotton	**133**	1365
Cotton, wet	**133**	1365
Cotton waste, oily	**133**	1364
Coumarin derivative pesticide, liquid, flammable, poisonous	**131**	3024
Coumarin derivative pesticide, liquid, flammable, toxic	**131**	3024
Coumarin derivative pesticide, liquid, poisonous	**151**	3026
Coumarin derivative pesticide, liquid, poisonous, flammable	**131**	3025
Coumarin derivative pesticide, liquid, toxic	**151**	3026
Coumarin derivative pesticide, liquid, toxic, flammable	**131**	3025
Coumarin derivative pesticide, solid, poisonous	**151**	3027
Coumarin derivative pesticide, solid, toxic	**151**	3027
Cresols, liquid	**153**	2076
Cresols, solid	**153**	2076
Cresols, solid	**153**	3455

Name of Material	Guide No.	ID No.
Cresylic acid	**153**	2022
Crotonaldehyde	**131P**	1143
Crotonaldehyde, stabilized	**131P**	1143
Crotonic acid	**153**	2823
Crotonic acid, liquid	**153**	2823
Crotonic acid, liquid	**153**	3472
Crotonic acid, solid	**153**	2823
Crotonylene	**128**	1144
CS	**153**	2810
Cumene	**130**	1918
Cupriethylenediamine, solution	**154**	1761
CX	**154**	2811
Cyanide solution, n.o.s.	**157**	1935
Cyanides, inorganic, solid, n.o.s.	**157**	1588
Cyanogen	**119**	1026
Cyanogen bromide	**157**	1889
Cyanogen chloride, stabilized	**125**	1589
Cyanuric chloride	**157**	2670
Cyclobutane	**115**	2601
Cyclobutyl chloroformate	**155**	2744
1,5,9-Cyclododecatriene	**153**	2518
Cycloheptane	**128**	2241
Cycloheptatriene	**131**	2603
Cycloheptene	**128**	2242
Cyclohexane	**128**	1145
Cyclohexanethiol	**129**	3054
Cyclohexanone	**127**	1915
Cyclohexene	**130**	2256
Cyclohexenyltrichlorosilane	**156**	1762
Cyclohexyl acetate	**130**	2243
Cyclohexylamine	**132**	2357

Name of Material	Guide No.	ID No.
Cyclohexyl isocyanate	155	2488
Cyclohexyl mercaptan	129	3054
Cyclohexyltrichlorosilane	156	1763
Cyclooctadiene phosphines	135	2940
Cyclooctadienes	130P	2520
Cyclooctatetraene	128P	2358
Cyclopentane	128	1146
Cyclopentanol	129	2244
Cyclopentanone	128	2245
Cyclopentene	128	2246
Cyclopropane	115	1027
Cymenes	130	2046
DA	151	1699
Dangerous goods in apparatus	171	3363
Dangerous goods in machinery	171	3363
DC	153	2810
Decaborane	134	1868
Decahydronaphthalene	130	1147
n-Decane	128	2247
Denatured alcohol	127	1987
Desensitized explosive, liquid, n.o.s.	128	3379
Desensitized explosive, solid, n.o.s.	133	3380
Deuterium	115	1957
Deuterium, compressed	115	1957
Devices, small, hydrocarbon gas powered, with release device	115	3150
Diacetone alcohol	129	1148
Diacetyl	127	2346
Diallylamine	132	2359
Diallyl ether	131P	2360
4,4'-Diaminodiphenylmethane	153	2651
Di-n-amylamine	131	2841
Dibenzyldichlorosilane	156	2434
Diborane	119	1911
Diborane, compressed	119	1911
Diborane mixtures	119	1911
1,2-Dibromobutan-3-one	154	2648
Dibromochloropropanes	159	2872
Dibromodifluoromethane	171	1941
Dibromomethane	160	2664
Di-n-butylamine	132	2248
Dibutylaminoethanol	153	2873
Dibutyl ethers	128	1149
Dichloroacetic acid	153	1764
1,3-Dichloroacetone	153	2649
Dichloroacetyl chloride	156	1765
Dichloroanilines, liquid	153	1590
Dichloroanilines, solid	153	1590
Dichloroanilines, solid	153	3442
o-Dichlorobenzene	152	1591
2,2'-Dichlorodiethyl ether	152	1916
Dichlorodifluoromethane	126	1028
Dichlorodifluoromethane and Difluoroethane azeotropic mixture with approximately 74% Dichlorodifluoromethane	126	2602
Dichlorodifluoromethane and Ethylene oxide mixture, with not more than 12.5% Ethylene oxide	126	3070
Dichlorodimethyl ether, symmetrical	131	2249
1,1-Dichloroethane	130	2362
1,2-Dichloroethylene	130P	1150
Dichloroethyl ether	152	1916

Name of Material	Guide No.	ID No.
Dichlorofluoromethane	**126**	1029
Dichloroisocyanuric acid, dry	**140**	2465
Dichloroisocyanuric acid salts	**140**	2465
Dichloroisopropyl ether	**153**	2490
Dichloromethane	**160**	1593
1,1-Dichloro-1-nitroethane	**153**	2650
Dichloropentanes	**130**	1152
Dichlorophenyl isocyanates	**156**	2250
Dichlorophenyltrichlorosilane	**156**	1766
1,2-Dichloropropane	**130**	1279
1,3-Dichloropropanol-2	**153**	2750
Dichloropropenes	**129**	2047
Dichlorosilane	**119**	2189
1,2-Dichloro-1,1,2,2-tetrafluoroethane	**126**	1958
3,5-Dichloro-2,4,6-trifluoropyridine	**151**	9264
Dicyclohexylamine	**153**	2565
Dicyclohexylammonium nitrite	**133**	2687
Dicyclopentadiene	**130**	2048
1,2-Di-(dimethylamino)ethane	**129**	2372
Didymium nitrate	**140**	1465
Diesel fuel	**128**	1202
Diesel fuel	**128**	1993
Diethoxymethane	**127**	2373
3,3-Diethoxypropene	**127**	2374
Diethylamine	**132**	1154
2-Diethylaminoethanol	**132**	2686
3-Diethylaminopropylamine	**132**	2684
Diethylaminopropylamine	**132**	2684
N,N-Diethylaniline	**153**	2432
Diethylbenzene	**130**	2049
Diethyl carbonate	**128**	2366

Name of Material	Guide No.	ID No.
Diethyldichlorosilane	**155**	1767
Diethylenetriamine	**154**	2079
Diethyl ether	**127**	1155
N,N-Diethylethylenediamine	**132**	2685
Diethyl ketone	**127**	1156
Diethyl sulfate	**152**	1594
Diethyl sulfide	**129**	2375
Diethyl sulphate	**152**	1594
Diethyl sulphide	**129**	2375
Diethylthiophosphoryl chloride	**155**	2751
Diethylzinc	**135**	1366
Difluorochloroethanes	**115**	2517
1,1-Difluoroethane	**115**	1030
Difluoroethane and Dichlorodifluoromethane azeotropic mixture with approximately 74% Dichlorodifluoromethane	**126**	2602
1,1-Difluoroethylene	**116P**	1959
Difluoromethane	**115**	3252
Difluorophosphoric acid, anhydrous	**154**	1768
2,3-Dihydropyran	**127**	2376
Diisobutylamine	**132**	2361
Diisobutylene, isomeric compounds	**128**	2050
Diisobutyl ketone	**128**	1157
Diisooctyl acid phosphate	**153**	1902
Diisopropylamine	**132**	1158
Diisopropyl ether	**127**	1159
Diketene, stabilized	**131P**	2521
1,1-Dimethoxyethane	**127**	2377
1,2-Dimethoxyethane	**127**	2252
Dimethylamine, anhydrous	**118**	1032

Name of Material	Guide No.	ID No.
Dimethylamine, aqueous solution	132	1160
Dimethylamine, solution	132	1160
2-Dimethylaminoacetonitrile	131	2378
2-Dimethylaminoethanol	132	2051
2-Dimethylaminoethyl acrylate	152	3302
2-Dimethylaminoethyl methacrylate	153P	2522
N,N-Dimethylaniline	153	2253
2,3-Dimethylbutane	128	2457
1,3-Dimethylbutylamine	132	2379
Dimethylcarbamoyl chloride	156	2262
Dimethyl carbonate	129	1161
Dimethylcyclohexanes	128	2263
N,N-Dimethylcyclohexylamine	132	2264
Dimethylcyclohexylamine	132	2264
Dimethyldichlorosilane	155	1162
Dimethyldiethoxysilane	127	2380
Dimethyldioxanes	127	2707
Dimethyl disulfide	130	2381
Dimethyl disulphide	130	2381
Dimethyl ether	115	1033
N,N-Dimethylformamide	129	2265
1,1-Dimethylhydrazine	131	1163
Dimethylhydrazine, symmetrical	131	2382
Dimethylhydrazine, unsymmetrical	131	1163
2,2-Dimethylpropane	115	2044
Dimethyl-N-propylamine	132	2266
Dimethyl sulfate	156	1595
Dimethyl sulfide	130	1164
Dimethyl sulphate	156	1595
Dimethyl sulphide	130	1164

Name of Material	Guide No.	ID No.
Dimethyl thiophosphoryl chloride	156	2267
Dimethylzinc	135	1370
Dinitroanilines	153	1596
Dinitrobenzenes, liquid	152	1597
Dinitrobenzenes, solid	152	1597
Dinitrobenzenes, solid	152	3443
Dinitrochlorobenzenes	153	1577
Dinitro-o-cresol	153	1598
Dinitrogen tetroxide	124	1067
Dinitrogen tetroxide and Nitric oxide mixture	124	1975
Dinitrophenol, solution	153	1599
Dinitrophenol, wetted with not less than 15% water	113	1320
Dinitrophenolates, wetted with not less than 15% water	113	1321
Dinitroresorcinol, wetted with not less than 15% water	113	1322
Dinitrotoluenes	152	2038
Dinitrotoluenes, liquid	152	2038
Dinitrotoluenes, molten	152	1600
Dinitrotoluenes, solid	152	2038
Dinitrotoluenes, solid	152	3454
Dioxane	127	1165
Dioxolane	127	1166
Dipentene	128	2052
Diphenylamine chloroarsine	154	1698
Diphenylchloroarsine, liquid	151	1699
Diphenylchloroarsine, solid	151	1699
Diphenylchloroarsine, solid	151	3450
Diphenyldichlorosilane	156	1769
Diphenylmethyl bromide	153	1770

Name of Material	Guide No.	ID No.
Dipicryl sulfide, wetted with not less than 10% water	**113**	2852
Dipicryl sulphide, wetted with not less than 10% water	**113**	2852
Dipropylamine	**132**	2383
Di-n-propyl ether	**127**	2384
Dipropyl ketone	**128**	2710
Disinfectant, liquid, corrosive, n.o.s.	**153**	1903
Disinfectant, liquid, poisonous, n.o.s.	**151**	3142
Disinfectant, liquid, toxic, n.o.s.	**151**	3142
Disinfectant, solid, poisonous, n.o.s.	**151**	1601
Disinfectant, solid, toxic, n.o.s.	**151**	1601
Disodium trioxosilicate	**154**	3253
Dispersant gas, n.o.s.	**126**	1078
Dispersant gases, n.o.s. (flammable)	**115**	1954
Divinyl ether, stabilized	**128P**	1167
DM	**154**	1698
Dodecyltrichlorosilane	**156**	1771
DP	**125**	1076
Dry ice	**120**	1845
Dye, liquid, corrosive, n.o.s.	**154**	2801
Dye, liquid, poisonous, n.o.s.	**151**	1602
Dye, liquid, toxic, n.o.s.	**151**	1602
Dye, solid, corrosive, n.o.s.	**154**	3147
Dye, solid, poisonous, n.o.s.	**151**	3143
Dye, solid, toxic, n.o.s.	**151**	3143
Dye intermediate, liquid, corrosive, n.o.s.	**154**	2801
Dye intermediate, liquid, poisonous, n.o.s.	**151**	1602
Dye intermediate, liquid, toxic, n.o.s.	**151**	1602
Dye intermediate, solid, corrosive, n.o.s.	**154**	3147
Dye intermediate, solid, poisonous, n.o.s.	**151**	3143
Dye intermediate, solid, toxic, n.o.s.	**151**	3143
ED	**151**	1892
Elevated temperature liquid, flammable, n.o.s., with flash point above 37.8°C (100°F), at or above its flash point	**128**	3256
Elevated temperature liquid, flammable, n.o.s., with flash point above 60°C (140°F), at or above its flash point	**128**	3256
Elevated temperature liquid, n.o.s., at or above 100°C (212°F), and below its flash point	**128**	3257
Elevated temperature solid, n.o.s., at or above 240°C (464°F)	**171**	3258
Engine, fuel cell, flammable gas powered	**115**	3166
Engine, fuel cell, flammable gas powered	**115**	3529
Engine, fuel cell, flammable liquid powered	**128**	3166
Engine, fuel cell, flammable liquid powered	**128**	3528
Engine, internal combustion	**128**	3166
Engine, internal combustion	**171**	3530
Engine, internal combustion flammable gas powered	**115**	3529
Engine, internal combustion flammable liquid powered	**128**	3528
Engines, internal combustion, flammable gas powered	**115**	3166

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Engines, internal combustion, flammable liquid powered	**128**	3166
Environmentally hazardous substance, liquid, n.o.s.	**171**	3082
Environmentally hazardous substance, solid, n.o.s.	**171**	3077
Epibromohydrin	**131**	2558
Epichlorohydrin	**131P**	2023
1,2-Epoxy-3-ethoxypropane	**127**	2752
Esters, n.o.s.	**127**	3272
Ethane	**115**	1035
Ethane, compressed	**115**	1035
Ethane, refrigerated liquid	**115**	1961
Ethane-Propane mixture, refrigerated liquid	**115**	1961
Ethanol	**127**	1170
Ethanol and gasoline mixture, with more than 10% ethanol	**127**	3475
Ethanol and motor spirit mixture, with more than 10% ethanol	**127**	3475
Ethanol and petrol mixture, with more than 10% ethanol	**127**	3475
Ethanol, solution	**127**	1170
Ethanolamine	**153**	2491
Ethanolamine, solution	**153**	2491
Ethers, n.o.s.	**127**	3271
Ethyl acetate	**129**	1173
Ethylacetylene, stabilized	**116P**	2452
Ethyl acrylate, stabilized	**129P**	1917
Ethyl alcohol	**127**	1170
Ethyl alcohol, solution	**127**	1170
Ethylamine	**118**	1036
Ethylamine, aqueous solution, with not less than 50% but not more than 70% Ethylamine	**132**	2270
Ethyl amyl ketone	**128**	2271
2-Ethylaniline	**153**	2273
N-Ethylaniline	**153**	2272
Ethylbenzene	**130**	1175
N-Ethyl-N-benzylaniline	**153**	2274
N-Ethylbenzyltoluidines, liquid	**153**	2753
N-Ethylbenzyltoluidines, solid	**153**	2753
N-Ethylbenzyltoluidines, solid	**153**	3460
Ethyl borate	**129**	1176
Ethyl bromide	**131**	1891
Ethyl bromoacetate	**155**	1603
2-Ethylbutanol	**129**	2275
2-Ethylbutyl acetate	**130**	1177
Ethylbutyl acetate	**130**	1177
Ethyl butyl ether	**127**	1179
2-Ethylbutyraldehyde	**130**	1178
Ethyl butyrate	**130**	1180
Ethyl chloride	**115**	1037
Ethyl chloroacetate	**155**	1181
Ethyl chloroformate	**155**	1182
Ethyl 2-chloropropionate	**129**	2935
Ethyl chlorothioformate	**155**	2826
Ethyl crotonate	**130**	1862
Ethyldichloroarsine	**151**	1892
Ethyldichlorosilane	**139**	1183
Ethylene	**116P**	1962

Name of Material	Guide No.	ID No.
Ethylene, Acetylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene	**115**	3138
Ethylene, compressed	**116P**	1962
Ethylene, refrigerated liquid (cryogenic liquid)	**115**	1038
Ethylene chlorohydrin	**131**	1135
Ethylenediamine	**132**	1604
Ethylene dibromide	**154**	1605
Ethylene dibromide and Methyl bromide mixture, liquid	**151**	1647
Ethylene dichloride	**131**	1184
Ethylene glycol diethyl ether	**127**	1153
Ethylene glycol monoethyl ether	**127**	1171
Ethylene glycol monoethyl ether acetate	**129**	1172
Ethylene glycol monomethyl ether	**127**	1188
Ethylene glycol monomethyl ether acetate	**129**	1189
Ethyleneimine, stabilized	**131P**	1185
Ethylene oxide	**119P**	1040
Ethylene oxide and Carbon dioxide mixture, with more than 9% but not more than 87% Ethylene oxide	**115**	1041
Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide	**119P**	3300
Ethylene oxide and Carbon dioxide mixtures, with not more than 9% Ethylene oxide	**126**	1952
Ethylene oxide and Chlorotetrafluoroethane mixture, with not more than 8.8% Ethylene oxide	**126**	3297
Ethylene oxide and Dichlorodifluoromethane mixture, with not more than 12.5% Ethylene oxide	**126**	3070
Ethylene oxide and Pentafluoroethane mixture, with not more than 7.9% Ethylene oxide	**126**	3298
Ethylene oxide and Propylene oxide mixture, with not more than 30% Ethylene oxide	**129P**	2983
Ethylene oxide and Tetrafluoroethane mixture, with not more than 5.6% Ethylene oxide	**126**	3299
Ethylene oxide with Nitrogen	**119P**	1040
Ethyl ether	**127**	1155
Ethyl fluoride	**115**	2453
Ethyl formate	**129**	1190
Ethylhexaldehydes	**129**	1191
2-Ethylhexylamine	**132**	2276
2-Ethylhexyl chloroformate	**156**	2748
Ethyl isobutyrate	**129**	2385
Ethyl isocyanate	**155**	2481
Ethyl lactate	**129**	1192
Ethyl mercaptan	**129**	2363
Ethyl methacrylate	**130P**	2277
Ethyl methacrylate, stabilized	**130P**	2277
Ethyl methyl ether	**115**	1039
Ethyl methyl ketone	**127**	1193
Ethyl nitrite, solution	**131**	1194
Ethyl orthoformate	**129**	2524
Ethyl oxalate	**156**	2525
Ethylphenyldichlorosilane	**156**	2435

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Ethyl phosphonothioic dichloride, anhydrous	**154**	2927
Ethyl phosphonous dichloride, anhydrous	**135**	2845
Ethyl phosphorodichloridate	**154**	2927
1-Ethylpiperidine	**132**	2386
Ethyl propionate	**129**	1195
Ethyl propyl ether	**127**	2615
Ethyl silicate	**129**	1292
N-Ethyltoluidines	**153**	2754
Ethyltrichlorosilane	**155**	1196
Explosives, division 1.1, 1.2, 1.3 or 1.5	**112**	——
Explosives, division 1.4 or 1.6	**114**	——
Extracts, aromatic, liquid	**127**	1169
Extracts, flavoring, liquid	**127**	1197
Extracts, flavouring, liquid	**127**	1197
Fabrics, animal or vegetable or synthetic, n.o.s. with oil	**133**	1373
Fabrics impregnated with weakly nitrated Nitrocellulose, n.o.s.	**133**	1353
Ferric arsenate	**151**	1606
Ferric arsenite	**151**	1607
Ferric chloride, anhydrous	**157**	1773
Ferric chloride, solution	**154**	2582
Ferric nitrate	**140**	1466
Ferrocerium	**170**	1323
Ferrosilicon	**139**	1408
Ferrous arsenate	**151**	1608
Ferrous chloride, solid	**154**	1759
Ferrous chloride, solution	**154**	1760
Ferrous metal borings, shavings, turnings or cuttings	**170**	2793

Name of Material	Guide No.	ID No.
Fertilizer, ammoniating solution, with free Ammonia	**125**	1043
Fibers, animal or vegetable, burnt, wet or damp	**133**	1372
Fibers, animal or vegetable or synthetic, n.o.s. with oil	**133**	1373
Fibers, vegetable, dry	**133**	3360
Fibers impregnated with weakly nitrated Nitrocellulose, n.o.s.	**133**	1353
Fibres, animal or vegetable, burnt, wet or damp	**133**	1372
Fibres, animal or vegetable or synthetic, n.o.s. with oil	**133**	1373
Fibres, vegetable, dry	**133**	3360
Fibres impregnated with weakly nitrated Nitrocellulose, n.o.s.	**133**	1353
Films, nitrocellulose base	**133**	1324
Fire extinguisher charges, corrosive liquid	**154**	1774
Fire extinguishers with compressed gas	**126**	1044
Fire extinguishers with liquefied gas	**126**	1044
Firelighters, solid, with flammable liquid	**133**	2623
First aid kit	**171**	3316
Fish meal, stabilized	**171**	2216
Fish meal, unstabilized	**133**	1374
Fish scrap, stabilized	**171**	2216
Fish scrap, unstabilized	**133**	1374
Flammable liquid, corrosive, n.o.s	**132**	2924
Flammable liquid, n.o.s.	**128**	1993
Flammable liquid, poisonous, corrosive, n.o.s.	**131**	3286

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Flammable liquid, poisonous, n.o.s.	**131**	1992
Flammable liquid, toxic, corrosive, n.o.s.	**131**	3286
Flammable liquid, toxic, n.o.s.	**131**	1992
Flammable solid, corrosive, inorganic, n.o.s.	**134**	3180
Flammable solid, corrosive, organic, n.o.s.	**134**	2925
Flammable solid, inorganic, n.o.s.	**133**	3178
Flammable solid, organic, molten, n.o.s.	**133**	3176
Flammable solid, organic, n.o.s.	**133**	1325
Flammable solid, oxidizing, n.o.s.	**140**	3097
Flammable solid, poisonous, inorganic, n.o.s.	**134**	3179
Flammable solid, poisonous, organic, n.o.s.	**134**	2926
Flammable solid, toxic, inorganic, n.o.s.	**134**	3179
Flammable solid, toxic, organic, n.o.s.	**134**	2926
Fluorine	**124**	1045
Fluorine, compressed	**124**	1045
Fluoroacetic acid	**154**	2642
Fluoroanilines	**153**	2941
Fluorobenzene	**130**	2387
Fluoroboric acid	**154**	1775
Fluorophosphoric acid, anhydrous	**154**	1776
Fluorosilicates, n.o.s.	**151**	2856
Fluorosilicic acid	**154**	1778
Fluorosulfonic acid	**137**	1777
Fluorosulphonic acid	**137**	1777

Name of Material	Guide No.	ID No.
Fluorotoluenes	**130**	2388
Formaldehyde, solution (corrosive)	**132**	2209
Formaldehyde, solution, flammable	**132**	1198
Formalin (corrosive)	**132**	2209
Formalin (flammable)	**132**	1198
Formic acid	**153**	1779
Formic acid, with more than 85% acid	**153**	1779
Formic acid, with not less than 5% but less than 10% acid	**153**	3412
Formic acid, with not less than 10% but not more than 85% acid	**153**	3412
Fuel, aviation, turbine engine	**128**	1863
Fuel cell cartridges contained in equipment, containing corrosive substances	**153**	3477
Fuel cell cartridges contained in equipment, containing flammable liquids	**128**	3473
Fuel cell cartridges contained in equipment, containing hydrogen in metal hydride	**115**	3479
Fuel cell cartridges contained in equipment, containing liquefied flammable gas	**115**	3478
Fuel cell cartridges contained in equipment, containing water-reactive substances	**138**	3476
Fuel cell cartridges, containing corrosive substances	**153**	3477
Fuel cell cartridges, containing flammable liquids	**128**	3473
Fuel cell cartridges, containing hydrogen in metal hydride	**115**	3479

Name of Material	Guide No.	ID No.
Fuel cell cartridges, containing liquefied flammable gas	**115**	3478
Fuel cell cartridges, containing water-reactive substances	**138**	3476
Fuel cell cartridges packed with equipment, containing corrosive substances	**153**	3477
Fuel cell cartridges packed with equipment, containing flammable liquids	**128**	3473
Fuel cell cartridges packed with equipment, containing hydrogen in metal hydride	**115**	3479
Fuel cell cartridges packed with equipment, containing liquefied flammable gas	**115**	3478
Fuel cell cartridges packed with equipment, containing water-reactive substances	**138**	3476
Fuel oil	**128**	1202
Fuel oil	**128**	1993
Fumaryl chloride	**156**	1780
Fumigated cargo transport unit	**171**	3359
Fumigated unit	**171**	3359
Furaldehydes	**132P**	1199
Furan	**128**	2389
Furfural	**132P**	1199
Furfuraldehydes	**132P**	1199
Furfuryl alcohol	**153**	2874
Furfurylamine	**132**	2526
Fusee (rail or highway)	**133**	1325
Fusel oil	**127**	1201
GA	**153**	2810
Gallium	**172**	2803
Gas, refrigerated liquid, flammable, n.o.s.	**115**	3312
Gas, refrigerated liquid, n.o.s.	**120**	3158
Gas, refrigerated liquid, oxidizing, n.o.s.	**122**	3311
Gas cartridges	**115**	2037
Gas identification set	**123**	9035
Gasohol	**128**	1203
Gas oil	**128**	1202
Gasoline	**128**	1203
Gasoline and ethanol mixture, with more than 10% ethanol	**127**	3475
Gas sample, non-pressurized, flammable, n.o.s., not refrigerated liquid	**115**	3167
Gas sample, non-pressurized, poisonous, flammable, n.o.s., not refrigerated liquid	**119**	3168
Gas sample, non-pressurized, poisonous, n.o.s., not refrigerated liquid	**123**	3169
Gas sample, non-pressurized, toxic, flammable, n.o.s., not refrigerated liquid	**119**	3168
Gas sample, non-pressurized, toxic, n.o.s., not refrigerated liquid	**123**	3169
GB	**153**	2810
GD	**153**	2810
Genetically modified micro-organisms	**171**	3245
Genetically modified organisms	**171**	3245
Germane	**119**	2192
Germane, adsorbed	**173**	3523
GF	**153**	2810
Glycerol alpha-monochlorohydrin	**153**	2689
Glycidaldehyde	**131P**	2622

Name of Material	Guide No.	ID No.
Guanidine nitrate	**143**	1467
H	**153**	2810
Hafnium powder, dry	**135**	2545
Hafnium powder, wetted with not less than 25% water	**170**	1326
Halogenated monomethyldiphenylmethanes, liquid	**171**	3151
Halogenated monomethyldiphenylmethanes, solid	**171**	3152
Hay, wet, damp or contaminated with oil	**133**	1327
Hazardous waste, liquid, n.o.s.	**171**	3082
Hazardous waste, solid, n.o.s.	**171**	3077
HD	**153**	2810
Heating oil, light	**128**	1202
Helium	**121**	1046
Helium, compressed	**121**	1046
Helium, refrigerated liquid (cryogenic liquid)	**120**	1963
Heptafluoropropane	**126**	3296
n-Heptaldehyde	**129**	3056
Heptanes	**128**	1206
n-Heptene	**128**	2278
Hexachloroacetone	**153**	2661
Hexachlorobenzene	**152**	2729
Hexachlorobutadiene	**151**	2279
Hexachlorocyclopentadiene	**151**	2646
Hexachlorophene	**151**	2875
Hexadecyltrichlorosilane	**156**	1781
Hexadiene	**130**	2458
Hexaethyl tetraphosphate	**151**	1611
Hexaethyl tetraphosphate and compressed gas mixture	**123**	1612

Name of Material	Guide No.	ID No.
Hexafluoroacetone	**125**	2420
Hexafluoroacetone hydrate	**151**	2552
Hexafluoroacetone hydrate, liquid	**151**	2552
Hexafluoroacetone hydrate, solid	**151**	3436
Hexafluoroethane	**126**	2193
Hexafluoroethane, compressed	**126**	2193
Hexafluorophosphoric acid	**154**	1782
Hexafluoropropylene	**126**	1858
Hexafluoropropylene, compressed	**126**	1858
Hexaldehyde	**130**	1207
Hexamethylenediamine, solid	**153**	2280
Hexamethylenediamine, solution	**153**	1783
Hexamethylene diisocyanate	**156**	2281
Hexamethyleneimine	**132**	2493
Hexamethylenetetramine	**133**	1328
Hexanes	**128**	1208
Hexanoic acid	**153**	2829
Hexanols	**129**	2282
1-Hexene	**128**	2370
Hexyltrichlorosilane	**156**	1784
HL	**153**	2810
HN-1	**153**	2810
HN-2	**153**	2810
HN-3	**153**	2810
Hydrazine, anhydrous	**132**	2029
Hydrazine aqueous solution, flammable, with more than 37% hydrazine, by mass	**132**	3484
Hydrazine, aqueous solution, with more than 37% Hydrazine	**153**	2030

Name of Material	Guide No.	ID No.
Hydrazine, aqueous solution, with not less than 37% but not more than 64% Hydrazine	**153**	2030
Hydrazine, aqueous solution, with not more than 37% Hydrazine	**152**	3293
Hydrazine hydrate	**153**	2030
Hydriodic acid	**154**	1787
Hydrobromic acid	**154**	1788
Hydrocarbon and butadienes mixture, stabilized	**116P**	1010
Hydrocarbon gas mixture, compressed, n.o.s.	**115**	1964
Hydrocarbon gas mixture, liquefied, n.o.s.	**115**	1965
Hydrocarbon gas refills for small devices, with release device	**115**	3150
Hydrocarbons, liquid, n.o.s.	**128**	3295
Hydrochloric acid	**157**	1789
Hydrocyanic acid, aqueous solution, with less than 5% Hydrogen cyanide	**154**	1613
Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide	**154**	1613
Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide	**117**	1051
Hydrofluoric acid	**157**	1790
Hydrofluoric acid and Sulfuric acid mixture	**157**	1786
Hydrofluoric acid and Sulphuric acid mixture	**157**	1786
Hydrofluorosilicic acid	**154**	1778
Hydrogen	**115**	1049
Hydrogen absorbed in metal hydride	**115**	9279
Hydrogen, compressed	**115**	1049
Hydrogen in a metal hydride storage system	**115**	3468
Hydrogen in a metal hydride storage system contained in equipment	**115**	3468
Hydrogen in a metal hydride storage system packed with equipment	**115**	3468
Hydrogen, refrigerated liquid (cryogenic liquid)	**115**	1966
Hydrogen and Carbon monoxide mixture, compressed	**119**	2600
Hydrogen and Methane mixture, compressed	**115**	2034
Hydrogen bromide, anhydrous	**125**	1048
Hydrogen chloride, anhydrous	**125**	1050
Hydrogen chloride, refrigerated liquid	**125**	2186
Hydrogen cyanide, anhydrous, stabilized	**117**	1051
Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide	**154**	1613
Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide	**131**	3294
Hydrogen cyanide, stabilized	**117**	1051
Hydrogen cyanide, stabilized (absorbed)	**152**	1614
Hydrogendifluorides, n.o.s.	**154**	1740
Hydrogendifluorides, solid, n.o.s.	**154**	1740
Hydrogendifluorides, solution, n.o.s.	**154**	3471
Hydrogen fluoride, anhydrous	**125**	1052
Hydrogen iodide, anhydrous	**125**	2197

Name of Material	Guide No.	ID No.
Hydrogen peroxide, aqueous solution, stabilized, with more than 60% Hydrogen peroxide	**143**	2015
Hydrogen peroxide, aqueous solution, with not less than 8% but less than 20% Hydrogen peroxide	**140**	2984
Hydrogen peroxide, aqueous solution, with not less than 20% but not more than 60% Hydrogen peroxide (stabilized as necessary)	**140**	2014
Hydrogen peroxide, stabilized	**143**	2015
Hydrogen peroxide and Peroxyacetic acid mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilized	**140**	3149
Hydrogen selenide, adsorbed	**173**	3526
Hydrogen selenide, anhydrous	**117**	2202
Hydrogen sulfide	**117**	1053
Hydrogen sulphide	**117**	1053
Hydroquinone	**153**	2662
Hydroquinone, solution	**153**	3435
1-Hydroxybenzotriazole, anhydrous, wetted with not less than 20% water	**113**	3474
1-Hydroxybenzotriazole, monohydrate	**113**	3474
Hydroxylamine sulfate	**154**	2865
Hydroxylamine sulphate	**154**	2865
Hypochlorite solution	**154**	1791
Hypochlorites, inorganic, n.o.s.	**140**	3212
3,3'-Iminodipropylamine	**153**	2269
Infectious substance, affecting animals only	**158**	2900
Infectious substance, affecting humans	**158**	2814

Name of Material	Guide No.	ID No.
Ink, printer's, flammable	**129**	1210
Insecticide gas, flammable, n.o.s.	**115**	3354
Insecticide gas, n.o.s.	**126**	1968
Insecticide gas, poisonous, flammable, n.o.s.	**119**	3355
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	**119**	3355
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	**119**	3355
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	**119**	3355
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	**119**	3355
Insecticide gas, poisonous, n.o.s.	**123**	1967
Insecticide gas, toxic, flammable, n.o.s.	**119**	3355
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	**119**	3355
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	**119**	3355
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	**119**	3355
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	**119**	3355
Insecticide gas, toxic, n.o.s.	**123**	1967
Iodine	**154**	3495
Iodine monochloride, liquid	**157**	3498
Iodine monochloride, solid	**157**	1792
Iodine pentafluoride	**144**	2495
2-Iodobutane	**129**	2390

Name of Material	Guide No.	ID No.
Iodomethylpropanes	**129**	2391
Iodopropanes	**129**	2392
IPDI	**156**	2290
Iron oxide, spent	**135**	1376
Iron pentacarbonyl	**131**	1994
Iron sponge, spent	**135**	1376
Isobutane	**115**	1075
Isobutane	**115**	1969
Isobutanol	**129**	1212
Isobutyl acetate	**129**	1213
Isobutyl acrylate, stabilized	**129P**	2527
Isobutyl alcohol	**129**	1212
Isobutyl aldehyde	**130**	2045
Isobutylamine	**132**	1214
Isobutyl chloroformate	**155**	2742
Isobutylene	**115**	1055
Isobutylene	**115**	1075
Isobutyl formate	**129**	2393
Isobutyl isobutyrate	**130**	2528
Isobutyl isocyanate	**155**	2486
Isobutyl methacrylate, stabilized	**130P**	2283
Isobutyl propionate	**129**	2394
Isobutyraldehyde	**130**	2045
Isobutyric acid	**132**	2529
Isobutyronitrile	**131**	2284
Isobutyryl chloride	**132**	2395
Isocyanate solution, flammable, poisonous, n.o.s.	**155**	2478
Isocyanate solution, flammable, toxic, n.o.s.	**155**	2478

Name of Material	Guide No.	ID No.
Isocyanate solution, poisonous, flammable, n.o.s.	**155**	3080
Isocyanate solution, poisonous, n.o.s.	**155**	2206
Isocyanate solution, toxic, flammable, n.o.s.	**155**	3080
Isocyanate solution, toxic, n.o.s.	**155**	2206
Isocyanates, flammable, poisonous, n.o.s.	**155**	2478
Isocyanates, flammable, toxic, n.o.s.	**155**	2478
Isocyanates, poisonous, flammable, n.o.s.	**155**	3080
Isocyanates, poisonous, n.o.s.	**155**	2206
Isocyanates, toxic, flammable, n.o.s.	**155**	3080
Isocyanates, toxic, n.o.s.	**155**	2206
Isocyanatobenzotrifluorides	**156**	2285
Isoheptenes	**128**	2287
Isohexenes	**128**	2288
Isooctane	**128**	1262
Isooctenes	**128**	1216
Isopentane	**128**	1265
Isopentenes	**128**	2371
Isophoronediamine	**153**	2289
Isophorone diisocyanate	**156**	2290
Isoprene, stabilized	**130P**	1218
Isopropanol	**129**	1219
Isopropenyl acetate	**129P**	2403
Isopropenylbenzene	**128**	2303
Isopropyl acetate	**129**	1220
Isopropyl acid phosphate	**153**	1793
Isopropyl alcohol	**129**	1219
Isopropylamine	**132**	1221

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Isopropylbenzene	**130**	1918
Isopropyl butyrate	**129**	2405
Isopropyl chloroacetate	**155**	2947
Isopropyl chloroformate	**155**	2407
Isopropyl 2-chloropropionate	**129**	2934
Isopropyl isobutyrate	**127**	2406
Isopropyl isocyanate	**155**	2483
Isopropyl nitrate	**130**	1222
Isopropyl propionate	**129**	2409
Isosorbide dinitrate mixture	**133**	2907
Isosorbide-5-mononitrate	**133**	3251
Kerosene	**128**	1223
Ketones, liquid, n.o.s.	**127**	1224
Krill meal	**133**	3497
Krypton	**121**	1056
Krypton, compressed	**121**	1056
Krypton, refrigerated liquid (cryogenic liquid)	**120**	1970
L (Lewisite)	**153**	2810
Lead acetate	**151**	1616
Lead arsenates	**151**	1617
Lead arsenites	**151**	1618
Lead compound, soluble, n.o.s.	**151**	2291
Lead cyanide	**151**	1620
Lead dioxide	**141**	1872
Lead nitrate	**141**	1469
Lead perchlorate	**141**	1470
Lead perchlorate, solid	**141**	1470
Lead perchlorate, solution	**141**	3408
Lead phosphite, dibasic	**133**	2989
Lead sulfate, with more than 3% free acid	**154**	1794
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Lewisite	**153**	2810
Life-saving appliances, not self-inflating	**171**	3072
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Lighter refills (cigarettes) (flammable gas)	**115**	1057
Lighters (cigarettes) (flammable gas)	**115**	1057
Lighters, non-pressurized, containing flammable liquid	**128**	1057
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Liquefied gas, n.o.s.	**126**	3163
Liquefied gas, oxidizing, n.o.s.	**122**	3157
Liquefied gas, poisonous, corrosive, n.o.s.	**123**	3308
Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	**123**	3308
Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	**123**	3308
Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	**123**	3308
Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	**123**	3308
Liquefied gas, poisonous, flammable, corrosive, n.o.s.	**119**	3309
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	**119**	3309
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	**119**	3309

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Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	**119**	3309
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	**119**	3309
Liquefied gas, poisonous, flammable, n.o.s.	**119**	3160
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	**119**	3160
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	**119**	3160
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	**119**	3160
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	**119**	3160
Liquefied gas, poisonous, n.o.s.	**123**	3162
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	**123**	3162
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	**123**	3162
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	**123**	3162
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	**123**	3162
Liquefied gas, poisonous, oxidizing, corrosive, n.o.s.	**124**	3310
Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	**124**	3310
Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	**124**	3310

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Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	**124**	3310
Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	**124**	3310
Liquefied gas, poisonous, oxidizing, n.o.s.	**124**	3307
Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)	**124**	3307
Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	**124**	3307
Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	**124**	3307
Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	**124**	3307
Liquefied gas, toxic, corrosive, n.o.s.	**123**	3308
Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	**123**	3308
Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	**123**	3308
Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	**123**	3308
Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	**123**	3308
Liquefied gas, toxic, flammable, corrosive, n.o.s.	**119**	3309
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	**119**	3309
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	**119**	3309

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Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	**119**	3309
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	**119**	3309
Liquefied gas, toxic, flammable, n.o.s.	**119**	3160
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	**119**	3160
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	**119**	3160
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	**119**	3160
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	**119**	3160
Liquefied gas, toxic, n.o.s.	**123**	3162
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)	**123**	3162
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)	**123**	3162
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)	**123**	3162
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone D)	**123**	3162
Liquefied gas, toxic, oxidizing, corrosive, n.o.s.	**124**	3310
Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	**124**	3310
Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	**124**	3310
Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	**124**	3310
Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	**124**	3310
Liquefied gas, toxic, oxidizing, n.o.s.	**124**	3307
Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	**124**	3307
Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	**124**	3307
Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	**124**	3307
Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	**124**	3307
Liquefied gases, non-flammable, charged with Nitrogen, Carbon dioxide or Air	**120**	1058
Liquefied natural gas (cryogenic liquid)	**115**	1972
Liquefied petroleum gas	**115**	1075
Lithium	**138**	1415
Lithium alkyls	**135**	2445
Lithium alkyls, liquid	**135**	2445
Lithium alkyls, solid	**135**	3433
Lithium aluminum hydride	**138**	1410
Lithium aluminum hydride, ethereal	**138**	1411
Lithium batteries	**138**	3090
Lithium batteries contained in equipment	**138**	3091
Lithium batteries packed with equipment	**138**	3091
Lithium borohydride	**138**	1413
Lithium ferrosilicon	**139**	2830
Lithium hydride	**138**	1414

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Lithium hydride, fused solid	**138**	2805
Lithium hydroxide	**154**	2680
Lithium hydroxide, monohydrate	**154**	2680
Lithium hydroxide, solution	**154**	2679
Lithium hypochlorite, dry	**140**	1471
Lithium hypochlorite mixture	**140**	1471
Lithium hypochlorite mixtures, dry	**140**	1471
Lithium ion batteries (including lithium ion polymer batteries)	**147**	3480
Lithium ion batteries contained in equipment (including lithium ion polymer batteries)	**147**	3481
Lithium ion batteries packed with equipment (including lithium ion polymer batteries)	**147**	3481
Lithium metal batteries (including lithium alloy batteries)	**138**	3090
Lithium metal batteries contained in equipment (including lithium alloy batteries)	**138**	3091
Lithium metal batteries packed with equipment (including lithium alloy batteries)	**138**	3091
Lithium nitrate	**140**	2722
Lithium nitride	**138**	2806
Lithium peroxide	**143**	1472
Lithium silicon	**138**	1417
LNG (cryogenic liquid)	**115**	1972
London purple	**151**	1621
LPG	**115**	1075
Machinery, fuel cell, flammable gas powered	**115**	3529
Machinery, fuel cell, flammable liquid powered	**128**	3528
Machinery, internal combustion	**171**	3530
Machinery, internal combustion, flammable gas powered	**115**	3529
Machinery, internal combustion, flammable liquid powered	**128**	3528
Magnesium	**138**	1869
Magnesium, in pellets, turnings or ribbons	**138**	1869
Magnesium alkyls	**135**	3053
Magnesium alloys, with more than 50% Magnesium, in pellets, turnings or ribbons	**138**	1869
Magnesium alloys powder	**138**	1418
Magnesium aluminum phosphide	**139**	1419
Magnesium arsenate	**151**	1622
Magnesium bromate	**140**	1473
Magnesium chlorate	**140**	2723
Magnesium chloride and Chlorate mixture	**140**	1459
Magnesium chloride and Chlorate mixture, solid	**140**	1459
Magnesium chloride and Chlorate mixture, solution	**140**	3407
Magnesium diamide	**135**	2004
Magnesium diphenyl	**135**	2005
Magnesium fluorosilicate	**151**	2853
Magnesium granules, coated	**138**	2950
Magnesium hydride	**138**	2010
Magnesium nitrate	**140**	1474
Magnesium perchlorate	**140**	1475
Magnesium peroxide	**140**	1476

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Magnesium phosphide	**139**	2011
Magnesium powder	**138**	1418
Magnesium silicide	**138**	2624
Magnesium silicofluoride	**151**	2853
Magnetized material	**171**	2807
Maleic anhydride	**156**	2215
Maleic anhydride, molten	**156**	2215
Malononitrile	**153**	2647
Maneb	**135**	2210
Maneb, stabilized	**135**	2968
Maneb preparation, stabilized	**135**	2968
Maneb preparation, with not less than 60% Maneb	**135**	2210
Manganese nitrate	**140**	2724
Manganese resinate	**133**	1330
Matches, fusee	**133**	2254
Matches, safety	**133**	1944
Matches, "strike anywhere"	**133**	1331
Matches, wax "vesta"	**133**	1945
MD	**152**	1556
Medical waste, n.o.s.	**158**	3291
Medicine, liquid, flammable, poisonous, n.o.s.	**131**	3248
Medicine, liquid, flammable, toxic, n.o.s.	**131**	3248
Medicine, liquid, poisonous, n.o.s.	**151**	1851
Medicine, liquid, toxic, n.o.s.	**151**	1851
Medicine, solid, poisonous, n.o.s.	**151**	3249
Medicine, solid, toxic, n.o.s.	**151**	3249
Mercaptan mixture, liquid, flammable, n.o.s.	**130**	3336
Mercaptan mixture, liquid, flammable, poisonous, n.o.s.	**131**	1228
Mercaptan mixture, liquid, flammable, toxic, n.o.s.	**131**	1228
Mercaptan mixture, liquid, poisonous, flammable, n.o.s.	**131**	3071
Mercaptan mixture, liquid, toxic, flammable, n.o.s.	**131**	3071
Mercaptans, liquid, flammable, n.o.s.	**130**	3336
Mercaptans, liquid, flammable, poisonous, n.o.s.	**131**	1228
Mercaptans, liquid, flammable, toxic, n.o.s.	**131**	1228
Mercaptans, liquid, poisonous, flammable, n.o.s.	**131**	3071
Mercaptans, liquid, toxic, flammable, n.o.s.	**131**	3071
Mercuric arsenate	**151**	1623
Mercuric bromide	**154**	1634
Mercuric chloride	**154**	1624
Mercuric cyanide	**154**	1636
Mercuric nitrate	**141**	1625
Mercuric oxycyanide	**151**	1642
Mercuric potassium cyanide	**157**	1626
Mercuric sulfate	**151**	1645
Mercuric sulphate	**151**	1645
Mercurous bromide	**154**	1634
Mercurous nitrate	**141**	1627
Mercury	**172**	2809
Mercury acetate	**151**	1629
Mercury ammonium chloride	**151**	1630
Mercury based pesticide, liquid, flammable, poisonous	**131**	2778

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Mercury based pesticide, liquid, flammable, toxic	**131**	2778
Mercury based pesticide, liquid, poisonous	**151**	3012
Mercury based pesticide, liquid, poisonous, flammable	**131**	3011
Mercury based pesticide, liquid, toxic	**151**	3012
Mercury based pesticide, liquid, toxic, flammable	**131**	3011
Mercury based pesticide, solid, poisonous	**151**	2777
Mercury based pesticide, solid, toxic	**151**	2777
Mercury benzoate	**154**	1631
Mercury bromides	**154**	1634
Mercury compound, liquid, n.o.s.	**151**	2024
Mercury compound, solid, n.o.s.	**151**	2025
Mercury contained in manufactured articles	**172**	3506
Mercury cyanide	**154**	1636
Mercury gluconate	**151**	1637
Mercury iodide	**151**	1638
Mercury metal	**172**	2809
Mercury nucleate	**151**	1639
Mercury oleate	**151**	1640
Mercury oxide	**151**	1641
Mercury oxycyanide, desensitized	**151**	1642
Mercury potassium iodide	**151**	1643
Mercury salicylate	**151**	1644
Mercury sulfate	**151**	1645
Mercury sulphate	**151**	1645
Mercury thiocyanate	**151**	1646

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Mesityl oxide	**129**	1229
Metal alkyl halides, water-reactive, n.o.s.	**138**	3049
Metal alkyl hydrides, water-reactive, n.o.s.	**138**	3050
Metal alkyls, water-reactive, n.o.s.	**135**	2003
Metal aryl halides, water-reactive, n.o.s.	**138**	3049
Metal aryl hydrides, water-reactive, n.o.s.	**138**	3050
Metal aryls, water-reactive, n.o.s.	**135**	2003
Metal carbonyls, liquid, n.o.s.	**151**	3281
Metal carbonyls, n.o.s.	**151**	3281
Metal carbonyls, solid, n.o.s.	**151**	3466
Metal catalyst, dry	**135**	2881
Metal catalyst, wetted	**170**	1378
Metaldehyde	**133**	1332
Metal hydrides, flammable, n.o.s.	**170**	3182
Metal hydrides, water-reactive, n.o.s.	**138**	1409
Metallic substance, water-reactive, n.o.s.	**138**	3208
Metallic substance, water-reactive, self-heating, n.o.s.	**138**	3209
Metal powder, flammable, n.o.s.	**170**	3089
Metal powder, self-heating, n.o.s.	**135**	3189
Metal salts of organic compounds, flammable, n.o.s.	**133**	3181
Methacrylaldehyde, stabilized	**131P**	2396
Methacrylic acid, stabilized	**153P**	2531
Methacrylonitrile, stabilized	**131P**	3079
Methallyl alcohol	**129**	2614

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Methane	**115**	1971
Methane, compressed	**115**	1971
Methane, refrigerated liquid (cryogenic liquid)	**115**	1972
Methane and Hydrogen mixture, compressed	**115**	2034
Methanesulfonyl chloride	**156**	3246
Methanesulphonyl chloride	**156**	3246
Methanol	**131**	1230
Methoxymethyl isocyanate	**155**	2605
4-Methoxy-4-methylpentan-2-one	**128**	2293
1-Methoxy-2-propanol	**129**	3092
Methyl acetate	**129**	1231
Methylacetylene and Propadiene mixture, stabilized	**116P**	1060
Methyl acrylate, stabilized	**129P**	1919
Methylal	**127**	1234
Methyl alcohol	**131**	1230
Methylallyl chloride	**130P**	2554
Methylamine, anhydrous	**118**	1061
Methylamine, aqueous solution	**132**	1235
Methylamyl acetate	**130**	1233
Methylamyl alcohol	**129**	2053
Methyl amyl ketone	**127**	1110
N-Methylaniline	**153**	2294
alpha-Methylbenzyl alcohol	**153**	2937
alpha-Methylbenzyl alcohol, liquid	**153**	2937
alpha-Methylbenzyl alcohol, solid	**153**	3438
Methylbenzyl alcohol (alpha)	**153**	2937
Methyl bromide	**123**	1062
Methyl bromide and Chloropicrin mixture	**123**	1581
Methyl bromide and Ethylene dibromide mixture, liquid	**151**	1647
Methyl bromoacetate	**155**	2643
2-Methylbutanal	**129**	3371
3-Methylbutan-2-one	**127**	2397
2-Methyl-1-butene	**128**	2459
2-Methyl-2-butene	**128**	2460
3-Methyl-1-butene	**128**	2561
N-Methylbutylamine	**132**	2945
Methyl tert-butyl ether	**127**	2398
Methyl butyrate	**129**	1237
Methyl chloride	**115**	1063
Methyl chloride and Chloropicrin mixture	**119**	1582
Methyl chloride and Methylene chloride mixture	**115**	1912
Methyl chloroacetate	**155**	2295
Methyl chloroformate	**155**	1238
Methyl chloromethyl ether	**131**	1239
Methyl 2-chloropropionate	**129**	2933
Methylchlorosilane	**119**	2534
Methylcyclohexane	**128**	2296
Methylcyclohexanols	**129**	2617
Methylcyclohexanone	**128**	2297
Methylcyclopentane	**128**	2298
Methyl dichloroacetate	**155**	2299
Methyldichloroarsine	**152**	1556
Methyldichlorosilane	**139**	1242
Methylene chloride	**160**	1593
Methylene chloride and Methyl chloride mixture	**115**	1912
Methyl ethyl ether	**115**	1039

Name of Material	Guide No.	ID No.
Methyl ethyl ketone	**127**	1193
2-Methyl-5-ethylpyridine	**153**	2300
Methyl fluoride	**115**	2454
Methyl formate	**129**	1243
2-Methylfuran	**128**	2301
2-Methyl-2-heptanethiol	**131**	3023
5-Methylhexan-2-one	**127**	2302
Methylhydrazine	**131**	1244
Methyl iodide	**151**	2644
Methyl isobutyl carbinol	**129**	2053
Methyl isobutyl ketone	**127**	1245
Methyl isocyanate	**155**	2480
Methyl isopropenyl ketone, stabilized	**127P**	1246
Methyl isothiocyanate	**131**	2477
Methyl isovalerate	**130**	2400
Methyl magnesium bromide in Ethyl ether	**135**	1928
Methyl mercaptan	**117**	1064
Methyl methacrylate monomer, stabilized	**129P**	1247
4-Methylmorpholine	**132**	2535
N-Methylmorpholine	**132**	2535
Methyl nitrite	**116**	2455
Methyl orthosilicate	**155**	2606
Methylpentadiene	**128**	2461
2-Methylpentan-2-ol	**129**	2560
Methylphenyldichlorosilane	**156**	2437
Methyl phosphonic dichloride	**137**	9206
Methyl phosphonous dichloride	**135**	2845
1-Methylpiperidine	**132**	2399
Methyl propionate	**129**	1248
Methyl propyl ether	**127**	2612

Name of Material	Guide No.	ID No.
Methyl propyl ketone	**127**	1249
Methyltetrahydrofuran	**127**	2536
Methyl trichloroacetate	**156**	2533
Methyltrichlorosilane	**155**	1250
alpha-Methylvaleraldehyde	**130**	2367
Methyl valeraldehyde (alpha)	**130**	2367
Methyl vinyl ketone, stabilized	**131P**	1251
M.I.B.C.	**129**	2053
Molten sulfur	**133**	2448
Molten sulphur	**133**	2448
Molybdenum pentachloride	**156**	2508
Monoethanolamine	**153**	2491
Mononitrotoluidines	**153**	2660
Morpholine	**132**	2054
Motor fuel anti-knock mixture	**131**	1649
Motor fuel anti-knock mixture, flammable	**131**	3483
Motor spirit	**128**	1203
Motor spirit and ethanol mixture, with more than 10% ethanol	**127**	3475
Muriatic acid	**157**	1789
Musk xylene	**149**	2956
Mustard	**153**	2810
Mustard Lewisite	**153**	2810
Naphthalene, crude	**133**	1334
Naphthalene, molten	**133**	2304
Naphthalene, refined	**133**	1334
alpha-Naphthylamine	**153**	2077
beta-Naphthylamine	**153**	1650
beta-Naphthylamine, solid	**153**	1650
beta-Naphthylamine, solution	**153**	3411
Naphthylamine (alpha)	**153**	2077

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Naphthylamine (beta)	**153**	1650
Naphthylamine (beta), solid	**153**	1650
Naphthylamine (beta), solution	**153**	3411
Naphthylthiourea	**153**	1651
Naphthylurea	**153**	1652
Natural gas, compressed	**115**	1971
Natural gas, refrigerated liquid (cryogenic liquid)	**115**	1972
Neohexane	**128**	1208
Neon	**121**	1065
Neon, compressed	**121**	1065
Neon, refrigerated liquid (cryogenic liquid)	**120**	1913
Nickel carbonyl	**131**	1259
Nickel catalyst, dry	**135**	2881
Nickel cyanide	**151**	1653
Nickel nitrate	**140**	2725
Nickel nitrite	**140**	2726
Nicotine	**151**	1654
Nicotine compound, liquid, n.o.s.	**151**	3144
Nicotine compound, solid, n.o.s.	**151**	1655
Nicotine hydrochloride	**151**	1656
Nicotine hydrochloride, liquid	**151**	1656
Nicotine hydrochloride, solid	**151**	3444
Nicotine hydrochloride, solution	**151**	1656
Nicotine preparation, liquid, n.o.s.	**151**	3144
Nicotine preparation, solid, n.o.s.	**151**	1655
Nicotine salicylate	**151**	1657
Nicotine sulfate, solid	**151**	1658
Nicotine sulfate, solid	**151**	3445
Nicotine sulfate, solution	**151**	1658
Nicotine sulphate, solid	**151**	1658
Nicotine sulphate, solid	**151**	3445
Nicotine sulphate, solution	**151**	1658
Nicotine tartrate	**151**	1659
Nitrates, inorganic, aqueous solution, n.o.s.	**140**	3218
Nitrates, inorganic, n.o.s.	**140**	1477
Nitrating acid mixture with more than 50% nitric acid	**157**	1796
Nitrating acid mixture with not more than 50% nitric acid	**157**	1796
Nitrating acid mixture, spent, with more than 50% nitric acid	**157**	1826
Nitrating acid mixture, spent, with not more than 50% nitric acid	**157**	1826
Nitric acid, other than red fuming, with more than 70% nitric acid	**157**	2031
Nitric acid, other than red fuming, with not more than 70% nitric acid	**157**	2031
Nitric acid, red fuming	**157**	2032
Nitric oxide	**124**	1660
Nitric oxide, compressed	**124**	1660
Nitric oxide and Dinitrogen tetroxide mixture	**124**	1975
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Nitric oxide and Nitrogen tetroxide mixture	**124**	1975
Nitriles, flammable, poisonous, n.o.s.	**131**	3273
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Nitriles, poisonous, flammable, n.o.s.	131	3275
Nitriles, poisonous, liquid, n.o.s.	151	3276
Nitriles, poisonous, n.o.s.	151	3276
Nitriles, poisonous, solid, n.o.s.	151	3439
Nitriles, solid, poisonous, n.o.s.	151	3439
Nitriles, solid, toxic, n.o.s.	151	3439
Nitriles, toxic, flammable, n.o.s.	131	3275
Nitriles, toxic, liquid, n.o.s.	151	3276
Nitriles, toxic, n.o.s.	151	3276
Nitriles, toxic, solid, n.o.s.	151	3439
Nitrites, inorganic, aqueous solution, n.o.s.	140	3219
Nitrites, inorganic, n.o.s.	140	2627
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Nitroanisoles, liquid	152	2730
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Nitrobenzene	152	1662
Nitrobenzenesulfonic acid	153	2305
Nitrobenzenesulphonic acid	153	2305
Nitrobenzotrifluorides	152	2306
Nitrobenzotrifluorides, liquid	152	2306
Nitrobenzotrifluorides, solid	152	3431
Nitrobromobenzenes, liquid	152	2732
Nitrobromobenzenes, solid	152	2732
Nitrobromobenzenes, solid	152	3459
Nitrocellulose membrane filters	133	3270
Nitrocellulose mixture, without pigment	133	2557
Nitrocellulose mixture, without plasticizer	133	2557
Nitrocellulose mixture, with pigment	133	2557
Nitrocellulose mixture, with plasticizer	133	2557
Nitrocellulose, solution, flammable	127	2059
Nitrocellulose with alcohol	113	2556
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3-Nitro-4-chlorobenzotrifluoride	152	2307
Nitrocresols	153	2446
Nitrocresols, liquid	153	3434
Nitrocresols, solid	153	2446
Nitroethane	129	2842
Nitrogen	121	1066
Nitrogen, compressed	121	1066
Nitrogen, refrigerated liquid (cryogenic liquid)	120	1977
Nitrogen and Rare gases mixture, compressed	121	1981
Nitrogen dioxide	124	1067
Nitrogen dioxide and Nitric oxide mixture	124	1975
Nitrogen tetroxide and Nitric oxide mixture	124	1975
Nitrogen trifluoride	122	2451
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Nitroglycerin, solution in alcohol, with more than 1% but not more than 5% Nitroglycerin	**127**	3064
Nitroglycerin, solution in alcohol, with not more than 1% Nitroglycerin	**127**	1204
Nitroglycerin mixture, desensitized, liquid, flammable, n.o.s., with not more than 30% Nitroglycerin	**113**	3343
Nitroglycerin mixture, desensitized, liquid, n.o.s., with not more than 30% Nitroglycerin	**113**	3357
Nitroglycerin mixture, desensitized, solid, n.o.s., with more than 2% but not more than 10% Nitroglycerin	**113**	3319
Nitroguanidine, wetted with not less than 20% water	**113**	1336
Nitrohydrochloric acid	**157**	1798
Nitromethane	**129**	1261
Nitronaphthalene	**133**	2538
Nitrophenols	**153**	1663
4-Nitrophenylhydrazine, with not less than 30% water	**113**	3376
Nitropropanes	**129**	2608
p-Nitrosodimethylaniline	**135**	1369
Nitrostarch, wetted with not less than 20% water	**113**	1337
Nitrosyl chloride	**125**	1069
Nitrosylsulfuric acid, liquid	**157**	2308
Nitrosylsulfuric acid, solid	**157**	2308
Nitrosylsulfuric acid, solid	**157**	3456
Nitrosylsulphuric acid, liquid	**157**	2308
Nitrosylsulphuric acid, solid	**157**	2308
Nitrosylsulphuric acid, solid	**157**	3456
Nitrotoluenes, liquid	**152**	1664
Nitrotoluenes, solid	**152**	1664
Nitrotoluenes, solid	**152**	3446
Nitrotoluidines (mono)	**153**	2660
Nitrous oxide	**122**	1070
Nitrous oxide, compressed	**122**	1070
Nitrous oxide, refrigerated liquid	**122**	2201
Nitrous oxide and Carbon dioxide mixture	**126**	1015
Nitroxylenes, liquid	**152**	1665
Nitroxylenes, solid	**152**	1665
Nitroxylenes, solid	**152**	3447
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Nonyltrichlorosilane	**156**	1799
2,5-Norbornadiene, stabilized	**128P**	2251
Octadecyltrichlorosilane	**156**	1800
Octadiene	**128P**	2309
Octafluorobut-2-ene	**126**	2422
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Octanes	**128**	1262
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Organic peroxide type C, liquid, temperature controlled	**148**	3113
Organic peroxide type C, solid	**146**	3104
Organic peroxide type C, solid, temperature controlled	**148**	3114
Organic peroxide type D, liquid	**145**	3105
Organic peroxide type D, liquid, temperature controlled	**148**	3115
Organic peroxide type D, solid	**145**	3106
Organic peroxide type D, solid, temperature controlled	**148**	3116
Organic peroxide type E, liquid	**145**	3107
Organic peroxide type E, liquid, temperature controlled	**148**	3117
Organic peroxide type E, solid	**145**	3108
Organic peroxide type E, solid, temperature controlled	**148**	3118
Organic peroxide type F, liquid	**145**	3109
Organic peroxide type F, liquid, temperature controlled	**148**	3119
Organic peroxide type F, solid	**145**	3110
Organic peroxide type F, solid, temperature controlled	**148**	3120
Organic phosphate compound mixed with compressed gas	**123**	1955
Organic phosphate mixed with compressed gas	**123**	1955
Organic phosphorus compound mixed with compressed gas	**123**	1955

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Organic pigments, self-heating	**135**	3313
Organoarsenic compound, liquid, n.o.s.	**151**	3280
Organoarsenic compound, n.o.s.	**151**	3280
Organoarsenic compound, solid, n.o.s.	**151**	3465
Organochlorine pesticide, liquid, flammable, poisonous	**131**	2762
Organochlorine pesticide, liquid, flammable, toxic	**131**	2762
Organochlorine pesticide, liquid, poisonous	**151**	2996
Organochlorine pesticide, liquid, poisonous, flammable	**131**	2995
Organochlorine pesticide, liquid, toxic	**151**	2996
Organochlorine pesticide, liquid, toxic, flammable	**131**	2995
Organochlorine pesticide, solid, poisonous	**151**	2761
Organochlorine pesticide, solid, toxic	**151**	2761
Organometallic compound, liquid, poisonous, n.o.s.	**151**	3282
Organometallic compound, liquid, toxic, n.o.s.	**151**	3282
Organometallic compound, poisonous, liquid, n.o.s.	**151**	3282
Organometallic compound, poisonous, n.o.s.	**151**	3282
Organometallic compound, poisonous, solid, n.o.s.	**151**	3467
Organometallic compound, solid, poisonous, n.o.s.	**151**	3467
Organometallic compound, solid, toxic, n.o.s.	**151**	3467

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Organometallic compound, toxic, liquid, n.o.s.	**151**	3282
Organometallic compound, toxic, n.o.s.	**151**	3282
Organometallic compound, toxic, solid, n.o.s.	**151**	3467
Organometallic compound, water-reactive, flammable, n.o.s.	**138**	3207
Organometallic compound dispersion, water-reactive, flammable, n.o.s.	**138**	3207
Organometallic compound solution, water-reactive, flammable, n.o.s.	**138**	3207
Organometallic substance, liquid, pyrophoric	**135**	3392
Organometallic substance, liquid, pyrophoric, water-reactive	**135**	3394
Organometallic substance, liquid, water-reactive	**135**	3398
Organometallic substance, liquid, water-reactive, flammable	**138**	3399
Organometallic substance, solid, pyrophoric	**135**	3391
Organometallic substance, solid, pyrophoric, water-reactive	**135**	3393
Organometallic substance, solid, self-heating	**138**	3400
Organometallic substance, solid, water-reactive	**135**	3395
Organometallic substance, solid, water-reactive, flammable	**138**	3396
Organometallic substance, solid, water-reactive, self-heating	**138**	3397
Organophosphorus compound, liquid, poisonous, n.o.s.	**151**	3278
Organophosphorus compound, liquid, toxic, n.o.s.	**151**	3278
Organophosphorus compound, poisonous, flammable, n.o.s.	**131**	3279
Organophosphorus compound, poisonous, liquid, n.o.s.	**151**	3278
Organophosphorus compound, poisonous, n.o.s.	**151**	3278
Organophosphorus compound, poisonous, solid, n.o.s.	**151**	3464
Organophosphorus compound, solid, poisonous, n.o.s.	**151**	3464
Organophosphorus compound, solid, toxic, n.o.s.	**151**	3464
Organophosphorus compound, toxic, flammable, n.o.s.	**131**	3279
Organophosphorus compound, toxic, liquid, n.o.s.	**151**	3278
Organophosphorus compound, toxic, n.o.s.	**151**	3278
Organophosphorus compound, toxic, solid, n.o.s.	**151**	3464
Organophosphorus pesticide, liquid, flammable, poisonous	**131**	2784
Organophosphorus pesticide, liquid, flammable, toxic	**131**	2784
Organophosphorus pesticide, liquid, poisonous	**152**	3018
Organophosphorus pesticide, liquid, poisonous, flammable	**131**	3017
Organophosphorus pesticide, liquid, toxic	**152**	3018
Organophosphorus pesticide, liquid, toxic, flammable	**131**	3017
Organophosphorus pesticide, solid, poisonous	**152**	2783
Organophosphorus pesticide, solid, toxic	**152**	2783

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Organotin compound, liquid, n.o.s.	**153**	2788
Organotin compound, solid, n.o.s.	**153**	3146
Organotin pesticide, liquid, flammable, poisonous	**131**	2787
Organotin pesticide, liquid, flammable, toxic	**131**	2787
Organotin pesticide, liquid, poisonous	**153**	3020
Organotin pesticide, liquid, poisonous, flammable	**131**	3019
Organotin pesticide, liquid, toxic	**153**	3020
Organotin pesticide, liquid, toxic, flammable	**131**	3019
Organotin pesticide, solid, poisonous	**153**	2786
Organotin pesticide, solid, toxic	**153**	2786
Osmium tetroxide	**154**	2471
Other regulated substances, liquid, n.o.s.	**171**	3082
Other regulated substances, solid, n.o.s.	**171**	3077
Oxidizing liquid, corrosive, n.o.s.	**140**	3098
Oxidizing liquid, n.o.s.	**140**	3139
Oxidizing liquid, poisonous, n.o.s.	**142**	3099
Oxidizing liquid, toxic, n.o.s.	**142**	3099
Oxidizing solid, corrosive, n.o.s.	**140**	3085
Oxidizing solid, flammable, n.o.s.	**140**	3137
Oxidizing solid, n.o.s.	**140**	1479
Oxidizing solid, poisonous, n.o.s.	**141**	3087
Oxidizing solid, self-heating, n.o.s.	**135**	3100
Oxidizing solid, toxic, n.o.s.	**141**	3087
Oxidizing solid, water-reactive, n.o.s.	**144**	3121
Oxygen	**122**	1072
Oxygen, compressed	**122**	1072
Oxygen, refrigerated liquid (cryogenic liquid)	**122**	1073
Oxygen and Carbon dioxide mixture, compressed	**122**	1014
Oxygen and Rare gases mixture, compressed	**121**	1980
Oxygen difluoride	**124**	2190
Oxygen difluoride, compressed	**124**	2190
Oxygen generator, chemical	**140**	3356
Oxygen generator, chemical, spent	**140**	3356
Packaging discarded, empty, uncleaned	**171**	3509
Paint (corrosive)	**153**	3066
Paint, corrosive, flammable	**132**	3470
Paint (flammable)	**128**	1263
Paint, flammable, corrosive	**132**	3469
Paint related material (corrosive)	**153**	3066
Paint related material, corrosive, flammable	**132**	3470
Paint related material (flammable)	**128**	1263
Paint related material, flammable, corrosive	**132**	3469
Paper, unsaturated oil treated	**133**	1379
Paraformaldehyde	**133**	2213
Paraldehyde	**129**	1264

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Parathion and compressed gas mixture	**123**	1967
PCB	**171**	2315
PD	**152**	1556
Pentaborane	**135**	1380
Pentachloroethane	**151**	1669
Pentachlorophenol	**154**	3155
Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN	**113**	3344
Pentaerythritol tetranitrate mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN	**113**	3344
Pentafluoroethane	**126**	3220
Pentafluoroethane and Ethylene oxide mixture, with not more than 7.9% Ethylene oxide	**126**	3298
Pentamethylheptane	**128**	2286
Pentane-2,4-dione	**131**	2310
Pentanes	**128**	1265
Pentanols	**129**	1105
1-Pentene	**128**	1108
1-Pentol	**153P**	2705
Perchlorates, inorganic, aqueous solution, n.o.s.	**140**	3211
Perchlorates, inorganic, n.o.s.	**140**	1481
Perchloric acid, with more than 50% but not more than 72% acid	**143**	1873
Perchloric acid, with not more than 50% acid	**140**	1802
Perchloroethylene	**160**	1897
Perchloromethyl mercaptan	**157**	1670

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Perchloryl fluoride	**124**	3083
Perfluoro(ethyl vinyl ether)	**115**	3154
Perfluoro(methyl vinyl ether)	**115**	3153
Perfumery products, with flammable solvents	**127**	1266
Permanganates, inorganic, aqueous solution, n.o.s.	**140**	3214
Permanganates, inorganic, n.o.s.	**140**	1482
Peroxides, inorganic, n.o.s.	**140**	1483
Peroxyacetic acid and hydrogen peroxide mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilized	**140**	3149
Persulfates, inorganic, aqueous solution, n.o.s.	**140**	3216
Persulfates, inorganic, n.o.s.	**140**	3215
Persulphates, inorganic, aqueous solution, n.o.s.	**140**	3216
Persulphates, inorganic, n.o.s.	**140**	3215
Pesticide, liquid, flammable, poisonous, n.o.s.	**131**	3021
Pesticide, liquid, flammable, toxic, n.o.s.	**131**	3021
Pesticide, liquid, poisonous, flammable, n.o.s.	**131**	2903
Pesticide, liquid, poisonous, n.o.s.	**151**	2902
Pesticide, liquid, toxic, flammable, n.o.s.	**131**	2903
Pesticide, liquid, toxic, n.o.s.	**151**	2902
Pesticide, solid, poisonous, n.o.s.	**151**	2588
Pesticide, solid, toxic, n.o.s.	**151**	2588
PETN mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN	**113**	3344

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Petrol	**128**	1203
Petrol and ethanol mixture, with more than 10% ethanol	**127**	3475
Petroleum crude oil	**128**	1267
Petroleum distillates, n.o.s.	**128**	1268
Petroleum gases, liquefied	**115**	1075
Petroleum oil	**128**	1270
Petroleum products, n.o.s.	**128**	1268
Petroleum sour crude oil, flammable, poisonous	**131**	3494
Petroleum sour crude oil, flammable, toxic	**131**	3494
Phenacyl bromide	**153**	2645
Phenetidines	**153**	2311
Phenol, molten	**153**	2312
Phenol, solid	**153**	1671
Phenol solution	**153**	2821
Phenolates, liquid	**154**	2904
Phenolates, solid	**154**	2905
Phenolsulfonic acid, liquid	**153**	1803
Phenolsulphonic acid, liquid	**153**	1803
Phenoxyacetic acid derivative pesticide, liquid, flammable, poisonous	**131**	3346
Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic	**131**	3346
Phenoxyacetic acid derivative pesticide, liquid, poisonous	**153**	3348
Phenoxyacetic acid derivative pesticide, liquid, poisonous, flammable	**131**	3347
Phenoxyacetic acid derivative pesticide, liquid, toxic	**153**	3348
Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable	**131**	3347

Name of Material	Guide No.	ID No.
Phenoxyacetic acid derivative pesticide, solid, poisonous	**153**	3345
Phenoxyacetic acid derivative pesticide, solid, toxic	**153**	3345
Phenylacetonitrile, liquid	**152**	2470
Phenylacetyl chloride	**156**	2577
Phenylcarbylamine chloride	**151**	1672
Phenyl chloroformate	**156**	2746
Phenylenediamines	**153**	1673
Phenylhydrazine	**153**	2572
Phenyl isocyanate	**155**	2487
Phenyl mercaptan	**131**	2337
Phenylmercuric acetate	**151**	1674
Phenylmercuric compound, n.o.s.	**151**	2026
Phenylmercuric hydroxide	**151**	1894
Phenylmercuric nitrate	**151**	1895
Phenylphosphorus dichloride	**137**	2798
Phenylphosphorus thiodichloride	**137**	2799
Phenyltrichlorosilane	**156**	1804
Phenyl urea pesticide, liquid, poisonous	**151**	3002
Phenyl urea pesticide, liquid, toxic	**151**	3002
Phosgene	**125**	1076
9-Phosphabicyclononanes	**135**	2940
Phosphine	**119**	2199
Phosphine, adsorbed	**173**	3525
Phosphoric acid, liquid	**154**	1805
Phosphoric acid, solid	**154**	1805
Phosphoric acid, solid	**154**	3453
Phosphoric acid, solution	**154**	1805
Phosphorous acid	**154**	2834

Name of Material	Guide No.	ID No.
Phosphorus, amorphous	**133**	1338
Phosphorus, white, dry or under water or in solution	**136**	1381
Phosphorus, white, molten	**136**	2447
Phosphorus, yellow, dry or under water or in solution	**136**	1381
Phosphorus heptasulfide, free from yellow and white Phosphorus	**139**	1339
Phosphorus heptasulphide, free from yellow and white Phosphorus	**139**	1339
Phosphorus oxybromide	**137**	1939
Phosphorus oxybromide, molten	**137**	2576
Phosphorus oxybromide, solid	**137**	1939
Phosphorus oxychloride	**137**	1810
Phosphorus pentabromide	**137**	2691
Phosphorus pentachloride	**137**	1806
Phosphorus pentafluoride	**125**	2198
Phosphorus pentafluoride, adsorbed	**173**	3524
Phosphorus pentafluoride, compressed	**125**	2198
Phosphorus pentasulfide, free from yellow and white Phosphorus	**139**	1340
Phosphorus pentasulphide, free from yellow and white Phosphorus	**139**	1340
Phosphorus pentoxide	**137**	1807
Phosphorus sesquisulfide, free from yellow and white Phosphorus	**139**	1341
Phosphorus sesquisulphide, free from yellow and white Phosphorus	**139**	1341
Phosphorus tribromide	**137**	1808
Phosphorus trichloride	**137**	1809

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Phosphorus trioxide	**157**	2578
Phosphorus trisulfide, free from yellow and white Phosphorus	**139**	1343
Phosphorus trisulphide, free from yellow and white Phosphorus	**139**	1343
Phthalic anhydride	**156**	2214
Picolines	**129**	2313
Picric acid, wetted with not less than 10% water	**113**	3364
Picric acid, wetted with not less than 30% water	**113**	1344
Picrite, wetted with not less than 20% water	**113**	1336
Picryl chloride, wetted with not less than 10% water	**113**	3365
alpha-Pinene	**128**	2368
Pinene (alpha)	**128**	2368
Pine oil	**129**	1272
Piperazine	**153**	2579
Piperidine	**132**	2401
Plastic molding compound	**171**	3314
Plastics moulding compound	**171**	3314
Plastics, nitrocellulose-based, self-heating, n.o.s.	**135**	2006
Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	**131**	3492
Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	**131**	3493
Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	**154**	3389
Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	**154**	3390

Name of Material	Guide No.	ID No.
Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	**131**	3488
Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	**131**	3489
Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	**131**	3383
Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	**131**	3384
Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)	**151**	3381
Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)	**151**	3382
Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	**142**	3387
Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	**142**	3388
Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	**155**	3490
Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	**155**	3491
Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	**139**	3385
Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	**139**	3386
Poisonous liquid, corrosive, inorganic, n.o.s.	**154**	3289
Poisonous liquid, corrosive, organic, n.o.s.	**154**	2927
Poisonous liquid, flammable, organic, n.o.s.	**131**	2929
Poisonous liquid, inorganic, n.o.s.	**151**	3287
Poisonous liquid, organic, n.o.s.	**153**	2810
Poisonous liquid, oxidizing, n.o.s.	**142**	3122
Poisonous liquid, water-reactive, n.o.s.	**139**	3123
Poisonous solid, corrosive, inorganic, n.o.s.	**154**	3290
Poisonous solid, corrosive, organic, n.o.s.	**154**	2928
Poisonous solid, flammable, organic, n.o.s.	**134**	2930
Poisonous solid, inorganic, n.o.s.	**151**	3288
Poisonous solid, organic, n.o.s.	**154**	2811
Poisonous solid, oxidizing, n.o.s.	**141**	3086
Poisonous solid, self-heating, n.o.s.	**136**	3124
Poisonous solid, water-reactive, n.o.s.	**139**	3125
Polyalkylamines, n.o.s.	**132**	2733
Polyalkylamines, n.o.s.	**132**	2734
Polyalkylamines, n.o.s.	**153**	2735
Polyamines, flammable, corrosive, n.o.s.	**132**	2733
Polyamines, liquid, corrosive, flammable, n.o.s.	**132**	2734
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Potassium sulfide, with less than 30% water of crystallization	**135**	1382
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Pyrophoric metal, n.o.s.	**135**	1383
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Pyrosulphuryl chloride	**137**	1817
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Resin solution	**127**	1866
Resorcinol	**153**	2876
Rosin oil	**127**	1286
Rubber scrap, powdered or granulated	**133**	1345
Rubber shoddy, powdered or granulated	**133**	1345
Rubber solution	**127**	1287
Rubidium	**138**	1423
Rubidium hydroxide	**154**	2678
Rubidium hydroxide, solid	**154**	2678
Rubidium hydroxide, solution	**154**	2677
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Seed cake, with not more than 1.5% oil and not more than 11% moisture	**135**	2217
Selenates	**151**	2630
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Selenites	**151**	2630
Selenium compound, liquid, n.o.s.	**151**	3440
Selenium compound, n.o.s.	**151**	3283
Selenium compound, solid, n.o.s.	**151**	3283
Selenium disulfide	**153**	2657
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Selenium hexafluoride	**125**	2194
Selenium oxychloride	**157**	2879

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Self-heating liquid, inorganic, n.o.s.	**135**	3186
Self-heating liquid, organic, n.o.s.	**135**	3183
Self-heating liquid, poisonous, inorganic, n.o.s.	**136**	3187
Self-heating liquid, poisonous, organic, n.o.s.	**136**	3184
Self-heating liquid, toxic, inorganic, n.o.s.	**136**	3187
Self-heating liquid, toxic, organic, n.o.s.	**136**	3184
Self-heating solid, corrosive, inorganic, n.o.s.	**136**	3192
Self-heating solid, corrosive, organic, n.o.s.	**136**	3126
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Self-heating solid, organic, n.o.s.	**135**	3088
Self-heating solid, oxidizing, n.o.s.	**135**	3127
Self-heating solid, poisonous, inorganic, n.o.s.	**136**	3191
Self-heating solid, poisonous, organic, n.o.s.	**136**	3128
Self-heating solid, toxic, inorganic, n.o.s.	**136**	3191
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Silicon powder, amorphous	**170**	1346
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Sludge acid	**153**	1906
Smokeless powder for small arms	**133**	3178
Soda lime, with more than 4% Sodium hydroxide	**154**	1907
Sodium	**138**	1428
Sodium aluminate, solid	**154**	2812
Sodium aluminate, solution	**154**	1819
Sodium aluminum hydride	**138**	2835
Sodium ammonium vanadate	**154**	2863
Sodium arsanilate	**154**	2473
Sodium arsenate	**151**	1685
Sodium arsenite, aqueous solution	**154**	1686
Sodium arsenite, solid	**151**	2027
Sodium azide	**153**	1687
Sodium, batteries containing	**138**	3292
Sodium bisulfate, solution	**154**	2837
Sodium bisulphate, solution	**154**	2837
Sodium borohydride	**138**	1426
Sodium borohydride and Sodium hydroxide solution, with not more than 12% Sodium borohydride and not more than 40% Sodium hydroxide	**157**	3320
Sodium bromate	**141**	1494
Sodium cacodylate	**152**	1688
Sodium carbonate peroxyhydrate	**140**	3378
Sodium chlorate	**140**	1495
Sodium chlorate, aqueous solution	**140**	2428
Sodium chlorite	**143**	1496
Sodium chloroacetate	**151**	2659
Sodium cuprocyanide, solid	**157**	2316
Sodium cuprocyanide, solution	**157**	2317
Sodium cyanide	**157**	1689
Sodium cyanide, solid	**157**	1689
Sodium cyanide, solution	**157**	3414
Sodium dichloroisocyanurate	**140**	2465
Sodium dichloro-s-triazinetrione	**140**	2465
Sodium dinitro-o-cresolate, wetted with not less than 10% water	**113**	3369
Sodium dinitro-o-cresolate, wetted with not less than 15% water	**113**	1348
Sodium dithionite	**135**	1384
Sodium fluoride	**154**	1690
Sodium fluoride, solid	**154**	1690
Sodium fluoride, solution	**154**	3415
Sodium fluoroacetate	**151**	2629
Sodium fluorosilicate	**154**	2674
Sodium hydride	**138**	1427
Sodium hydrogendifluoride	**154**	2439
Sodium hydrosulfide, hydrated, with not less than 25% water of crystallization	**154**	2949
Sodium hydrosulfide, with less than 25% water of crystallization	**135**	2318
Sodium hydrosulfide, with not less than 25% water of crystallization	**154**	2949
Sodium hydrosulfite	**135**	1384

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Sodium hydrosulphide, hydrated, with not less than 25% water of crystallization	**154**	2949
Sodium hydrosulphide, with less than 25% water of crystallization	**135**	2318
Sodium hydrosulphide, with not less than 25% water of crystallization	**154**	2949
Sodium hydrosulphite	**135**	1384
Sodium hydroxide, solid	**154**	1823
Sodium hydroxide, solution	**154**	1824
Sodium hypochlorite	**154**	1791
Sodium methylate	**138**	1431
Sodium methylate, dry	**138**	1431
Sodium methylate, solution in alcohol	**132**	1289
Sodium monoxide	**157**	1825
Sodium nitrate	**140**	1498
Sodium nitrate and Potassium nitrate mixture	**140**	1499
Sodium nitrite	**140**	1500
Sodium nitrite and Potassium nitrate mixture	**140**	1487
Sodium pentachlorophenate	**154**	2567
Sodium perborate monohydrate	**140**	3377
Sodium perchlorate	**140**	1502
Sodium permanganate	**140**	1503
Sodium peroxide	**144**	1504
Sodium peroxoborate, anhydrous	**140**	3247
Sodium persulfate	**140**	1505
Sodium persulphate	**140**	1505
Sodium phosphide	**139**	1432
Sodium picramate, wetted with not less than 20% water	**113**	1349

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Sodium potassium alloys, liquid	**138**	1422
Sodium potassium alloys, solid	**138**	3404
Sodium silicofluoride	**154**	2674
Sodium sulfide, anhydrous	**135**	1385
Sodium sulfide, hydrated, with not less than 30% water	**153**	1849
Sodium sulfide, with less than 30% water of crystallization	**135**	1385
Sodium sulphide, anhydrous	**135**	1385
Sodium sulphide, hydrated, with not less than 30% water	**153**	1849
Sodium sulphide, with less than 30% water of crystallization	**135**	1385
Sodium superoxide	**143**	2547
Solids containing corrosive liquid, n.o.s.	**154**	3244
Solids containing flammable liquid, n.o.s.	**133**	3175
Solids containing poisonous liquid, n.o.s.	**151**	3243
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Soman	**153**	2810
Stannic chloride, anhydrous	**137**	1827
Stannic chloride, pentahydrate	**154**	2440
Stannic phosphides	**139**	1433
Stibine	**119**	2676
Straw, wet, damp or contaminated with oil	**133**	1327
Strontium arsenite	**151**	1691
Strontium chlorate	**143**	1506
Strontium nitrate	**140**	1507
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Strontium peroxide	143	1509
Strontium phosphide	139	2013
Strychnine	151	1692
Strychnine salts	151	1692
Styrene monomer, stabilized	128P	2055
Substituted nitrophenol pesticide, liquid, flammable, poisonous	131	2780
Substituted nitrophenol pesticide, liquid, flammable, toxic	131	2780
Substituted nitrophenol pesticide, liquid, poisonous	153	3014
Substituted nitrophenol pesticide, liquid, poisonous, flammable	131	3013
Substituted nitrophenol pesticide, liquid, toxic	153	3014
Substituted nitrophenol pesticide, liquid, toxic, flammable	131	3013
Substituted nitrophenol pesticide, solid, poisonous	153	2779
Substituted nitrophenol pesticide, solid, toxic	153	2779
Sulfamic acid	154	2967
Sulfur	133	1350
Sulfur, molten	133	2448
Sulfur chlorides	137	1828
Sulfur dioxide	125	1079
Sulfur hexafluoride	126	1080
Sulfuric acid	137	1830
Sulfuric acid, fuming	137	1831
Sulfuric acid, fuming, with less than 30% free Sulfur trioxide	137	1831
Sulfuric acid, fuming, with not less than 30% free Sulfur trioxide	137	1831
Sulfuric acid, spent	137	1832
Sulfuric acid, with more than 51% acid	137	1830
Sulfuric acid, with not more than 51% acid	157	2796
Sulfuric acid and Hydrofluoric acid mixture	157	1786
Sulfurous acid	154	1833
Sulfur tetrafluoride	125	2418
Sulfur trioxide, stabilized	137	1829
Sulfuryl chloride	137	1834
Sulfuryl fluoride	123	2191
Sulphamic acid	154	2967
Sulphur	133	1350
Sulphur, molten	133	2448
Sulphur chlorides	137	1828
Sulphur dioxide	125	1079
Sulphur hexafluoride	126	1080
Sulphuric acid	137	1830
Sulphuric acid, fuming	137	1831
Sulphuric acid, fuming, with less than 30% free Sulphur trioxide	137	1831
Sulphuric acid, fuming, with not less than 30% free Sulphur trioxide	137	1831
Sulphuric acid, spent	137	1832
Sulphuric acid, with more than 51% acid	137	1830
Sulphuric acid, with not more than 51% acid	157	2796
Sulphuric acid and Hydrofluoric acid mixture	157	1786
Sulphurous acid	154	1833

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Sulphuryl chloride	**137**	1834
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Tabun	**153**	2810
Tars, liquid	**130**	1999
Tear gas candles	**159**	1700
Tear gas devices	**159**	1693
Tear gas grenades	**159**	1700
Tear gas substance, liquid, n.o.s.	**159**	1693
Tear gas substance, solid, n.o.s.	**159**	1693
Tear gas substance, solid, n.o.s.	**159**	3448
Tellurium compound, n.o.s.	**151**	3284
Tellurium hexafluoride	**125**	2195
Terpene hydrocarbons, n.o.s.	**128**	2319
Terpinolene	**128**	2541
Tetrabromoethane	**159**	2504
1,1,2,2-Tetrachloroethane	**151**	1702
Tetrachloroethane	**151**	1702
Tetrachloroethylene	**160**	1897
Tetraethyl dithiopyrophosphate	**153**	1704
Tetraethylenepentamine	**153**	2320
Tetraethyl silicate	**129**	1292
1,1,1,2-Tetrafluoroethane	**126**	3159
Tetrafluoroethane and Ethylene oxide mixture, with not more than 5.6% Ethylene oxide	**126**	3299
Tetrafluoroethylene, stabilized	**116P**	1081
Tetrafluoromethane	**126**	1982
Tetrafluoromethane, compressed	**126**	1982
1,2,3,6-Tetrahydrobenzaldehyde	**129**	2498
Tetrahydrofuran	**127**	2056
Tetrahydrofurfurylamine	**129**	2943
Tetrahydrophthalic anhydrides	**156**	2698
1,2,3,6-Tetrahydropyridine	**129**	2410
Tetrahydrothiophene	**130**	2412
Tetramethylammonium hydroxide	**153**	1835
Tetramethylammonium hydroxide, solid	**153**	3423
Tetramethylammonium hydroxide, solution	**153**	1835
Tetramethylsilane	**130**	2749
Tetranitromethane	**143**	1510
Tetrapropyl orthotitanate	**128**	2413
Textile waste, wet	**133**	1857
Thallium chlorate	**141**	2573
Thallium compound, n.o.s.	**151**	1707
Thallium nitrate	**141**	2727
4-Thiapentanal	**152**	2785
Thickened GD	**153**	2810
Thioacetic acid	**129**	2436
Thiocarbamate pesticide, liquid, flammable, poisonous	**131**	2772
Thiocarbamate pesticide, liquid, flammable, toxic	**131**	2772
Thiocarbamate pesticide, liquid, poisonous	**151**	3006
Thiocarbamate pesticide, liquid, poisonous, flammable	**131**	3005
Thiocarbamate pesticide, liquid, toxic	**151**	3006

Name of Material	Guide No.	ID No.
Thiocarbamate pesticide, liquid, toxic, flammable	**131**	3005
Thiocarbamate pesticide, solid, poisonous	**151**	2771
Thiocarbamate pesticide, solid, toxic	**151**	2771
Thioglycol	**153**	2966
Thioglycolic acid	**153**	1940
Thiolactic acid	**153**	2936
Thionyl chloride	**137**	1836
Thiophene	**130**	2414
Thiophosgene	**157**	2474
Thiophosphoryl chloride	**157**	1837
Thiourea dioxide	**135**	3341
Tinctures, medicinal	**127**	1293
Tin tetrachloride	**137**	1827
Titanium disulfide	**135**	3174
Titanium disulphide	**135**	3174
Titanium hydride	**170**	1871
Titanium powder, dry	**135**	2546
Titanium powder, wetted with not less than 25% water	**170**	1352
Titanium sponge granules	**170**	2878
Titanium sponge powders	**170**	2878
Titanium tetrachloride	**137**	1838
Titanium trichloride, pyrophoric	**135**	2441
Titanium trichloride mixture	**157**	2869
Titanium trichloride mixture, pyrophoric	**135**	2441
TNT, wetted with not less than 10% water	**113**	3366
TNT, wetted with not less than 30% water	**113**	1356
Toluene	**130**	1294

Name of Material	Guide No.	ID No.
2,4-Toluenediamine, solid	**151**	1709
2,4-Toluenediamine, solution	**151**	3418
Toluene diisocyanate	**156**	2078
Toluidines, liquid	**153**	1708
Toluidines, solid	**153**	1708
Toluidines, solid	**153**	3451
2,4-Toluylenediamine	**151**	1709
2,4-Toluylenediamine, solid	**151**	1709
2,4-Toluylenediamine, solution	**151**	3418
Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	**131**	3492
Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	**131**	3493
Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	**154**	3389
Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	**154**	3390
Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	**131**	3488
Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	**131**	3489
Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	**131**	3383
Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	**131**	3384
Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)	**151**	3381
Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)	**151**	3382

Name of Material	Guide No.	ID No.
Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	**142**	3387
Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	**142**	3388
Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	**155**	3490
Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	**155**	3491
Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	**139**	3385
Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	**139**	3386
Toxic liquid, corrosive, inorganic, n.o.s.	**154**	3289
Toxic liquid, corrosive, organic, n.o.s.	**154**	2927
Toxic liquid, flammable, organic, n.o.s.	**131**	2929
Toxic liquid, inorganic, n.o.s.	**151**	3287
Toxic liquid, organic, n.o.s.	**153**	2810
Toxic liquid, oxidizing, n.o.s.	**142**	3122
Toxic liquid, water-reactive, n.o.s.	**139**	3123
Toxic solid, corrosive, inorganic, n.o.s.	**154**	3290
Toxic solid, corrosive, organic, n.o.s.	**154**	2928
Toxic solid, flammable, organic, n.o.s.	**134**	2930
Toxic solid, inorganic, n.o.s.	**151**	3288
Toxic solid, organic, n.o.s.	**154**	2811
Toxic solid, oxidizing, n.o.s.	**141**	3086

Name of Material	Guide No.	ID No.
Toxic solid, self-heating, n.o.s.	**136**	3124
Toxic solid, water-reactive, n.o.s.	**139**	3125
Toxins	**153**	——
Toxins, extracted from living sources, liquid, n.o.s.	**153**	3172
Toxins, extracted from living sources, solid, n.o.s.	**153**	3172
Toxins, extracted from living sources, solid, n.o.s.	**153**	3462
Triallylamine	**132**	2610
Triallyl borate	**156**	2609
Triazine pesticide, liquid, flammable, poisonous	**131**	2764
Triazine pesticide, liquid, flammable, toxic	**131**	2764
Triazine pesticide, liquid, poisonous	**151**	2998
Triazine pesticide, liquid, poisonous, flammable	**131**	2997
Triazine pesticide, liquid, toxic	**151**	2998
Triazine pesticide, liquid, toxic, flammable	**131**	2997
Triazine pesticide, solid, poisonous	**151**	2763
Triazine pesticide, solid, toxic	**151**	2763
Tributylamine	**153**	2542
Tributylphosphane	**135**	3254
Trichloroacetic acid	**153**	1839
Trichloroacetic acid, solution	**153**	2564
Trichloroacetyl chloride	**156**	2442
Trichlorobenzenes, liquid	**153**	2321
Trichlorobutene	**152**	2322
1,1,1-Trichloroethane	**160**	2831
Trichloroethylene	**160**	1710

Name of Material	Guide No.	ID No.
Trichloroisocyanuric acid, dry	140	2468
Trichlorosilane	139	1295
Tricresyl phosphate	151	2574
Triethylamine	132	1296
Triethylenetetramine	153	2259
Triethyl phosphite	130	2323
Trifluoroacetic acid	154	2699
Trifluoroacetyl chloride	125	3057
Trifluorochloroethylene, stabilized	119P	1082
1,1,1-Trifluoroethane	115	2035
Trifluoromethane	126	1984
Trifluoromethane, refrigerated liquid	120	3136
Trifluoromethane and Chlorotrifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane	126	2599
2-Trifluoromethylaniline	153	2942
3-Trifluoromethylaniline	153	2948
Triisobutylene	128	2324
Triisopropyl borate	129	2616
Trimethoxysilane	132	9269
Trimethylacetyl chloride	132	2438
Trimethylamine, anhydrous	118	1083
Trimethylamine, aqueous solution	132	1297
1,3,5-Trimethylbenzene	129	2325
Trimethyl borate	129	2416
Trimethylchlorosilane	155	1298
Trimethylcyclohexylamine	153	2326
Trimethylhexamethylenediamines	153	2327
Trimethylhexamethylene diisocyanate	156	2328
Trimethyl phosphite	130	2329
Trinitrobenzene, wetted with not less than 10% water	113	3367
Trinitrobenzene, wetted with not less than 30% water	113	1354
Trinitrobenzoic acid, wetted with not less than 10% water	113	3368
Trinitrobenzoic acid, wetted with not less than 30% water	113	1355
Trinitrochlorobenzene, wetted with not less than 10% water	113	3365
Trinitrophenol, wetted with not less than 10% water	113	3364
Trinitrophenol, wetted with not less than 30% water	113	1344
Trinitrotoluene, wetted with not less than 10% water	113	3366
Trinitrotoluene, wetted with not less than 30% water	113	1356
Tripropylamine	132	2260
Tripropylene	128	2057
Tris-(1-aziridinyl)phosphine oxide, solution	152	2501
Tungsten hexafluoride	125	2196
Turpentine	128	1299
Turpentine substitute	128	1300
Undecane	128	2330
Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted	166	3507
Uranium hexafluoride, radioactive material, fissile	166	2977
Uranium hexafluoride, radioactive material, non fissile or fissile-excepted	166	2978
Urea hydrogen peroxide	140	1511
Urea nitrate, wetted with not less than 10% water	113	3370

Name of Material	Guide No.	ID No.
Urea nitrate, wetted with not less than 20% water	**113**	1357
Valeraldehyde	**129**	2058
Valeryl chloride	**132**	2502
Vanadium compound, n.o.s.	**151**	3285
Vanadium oxytrichloride	**137**	2443
Vanadium pentoxide	**151**	2862
Vanadium tetrachloride	**137**	2444
Vanadium trichloride	**157**	2475
Vanadyl sulfate	**151**	2931
Vanadyl sulphate	**151**	2931
Vehicle, flammable gas powered	**115**	3166
Vehicle, flammable liquid powered	**128**	3166
Vehicle, fuel cell, flammable gas powered	**115**	3166
Vehicle, fuel cell, flammable liquid powered	**128**	3166
Vinyl acetate, stabilized	**129P**	1301
Vinyl bromide, stabilized	**116P**	1085
Vinyl butyrate, stabilized	**129P**	2838
Vinyl chloride, stabilized	**116P**	1086
Vinyl chloroacetate	**155**	2589
Vinyl ethyl ether, stabilized	**127P**	1302
Vinyl fluoride, stabilized	**116P**	1860
Vinylidene chloride, stabilized	**130P**	1303
Vinyl isobutyl ether, stabilized	**127P**	1304
Vinyl methyl ether, stabilized	**116P**	1087
Vinylpyridines, stabilized	**131P**	3073
Vinyltoluenes, stabilized	**130P**	2618
Vinyltrichlorosilane	**155P**	1305
Vinyltrichlorosilane, stabilized	**155P**	1305
VX	**153**	2810

Name of Material	Guide No.	ID No.
Water-reactive liquid, corrosive, n.o.s.	**138**	3129
Water-reactive liquid, n.o.s.	**138**	3148
Water-reactive liquid, poisonous, n.o.s.	**139**	3130
Water-reactive liquid, toxic, n.o.s.	**139**	3130
Water-reactive solid, corrosive, n.o.s.	**138**	3131
Water-reactive solid, flammable, n.o.s.	**138**	3132
Water-reactive solid, n.o.s.	**138**	2813
Water-reactive solid, oxidizing, n.o.s.	**138**	3133
Water-reactive solid, poisonous, n.o.s.	**139**	3134
Water-reactive solid, self-heating, n.o.s.	**138**	3135
Water-reactive solid, toxic, n.o.s.	**139**	3134
Wheelchair, electric, with batteries	**154**	3171
White asbestos	**171**	2590
White phosphorus, dry	**136**	1381
White phosphorus, in solution	**136**	1381
White phosphorus, molten	**136**	2447
White phosphorus, under water	**136**	1381
Wood preservatives, liquid	**129**	1306
Wool waste, wet	**133**	1387
Xanthates	**135**	3342
Xenon	**121**	2036
Xenon, compressed	**121**	2036
Xenon, refrigerated liquid (cryogenic liquid)	**120**	2591
Xylenes	**130**	1307
Xylenols	**153**	2261

Name of Material	Guide No.	ID No.
Xylenols, liquid	**153**	3430
Xylenols, solid	**153**	2261
Xylidines, liquid	**153**	1711
Xylidines, solid	**153**	1711
Xylidines, solid	**153**	3452
Xylyl bromide	**152**	1701
Xylyl bromide, liquid	**152**	1701
Xylyl bromide, solid	**152**	3417
Yellow phosphorus, dry	**136**	1381
Yellow phosphorus, in solution	**136**	1381
Yellow phosphorus, under water	**136**	1381
Zinc ammonium nitrite	**140**	1512
Zinc arsenate	**151**	1712
Zinc arsenate and Zinc arsenite mixture	**151**	1712
Zinc arsenite	**151**	1712
Zinc arsenite and Zinc arsenate mixture	**151**	1712
Zinc ashes	**138**	1435
Zinc bromate	**140**	2469
Zinc chlorate	**140**	1513
Zinc chloride, anhydrous	**154**	2331
Zinc chloride, solution	**154**	1840
Zinc cyanide	**151**	1713
Zinc dithionite	**171**	1931
Zinc dross	**138**	1435
Zinc dust	**138**	1436
Zinc fluorosilicate	**151**	2855
Zinc hydrosulfite	**171**	1931
Zinc hydrosulphite	**171**	1931
Zinc nitrate	**140**	1514
Zinc permanganate	**140**	1515

Name of Material	Guide No.	ID No.
Zinc peroxide	**143**	1516
Zinc phosphide	**139**	1714
Zinc powder	**138**	1436
Zinc residue	**138**	1435
Zinc resinate	**133**	2714
Zinc silicofluoride	**151**	2855
Zinc skimmings	**138**	1435
Zirconium, dry, coiled wire, finished metal sheets or strip	**170**	2858
Zirconium, dry, finished sheets, strips or coiled wire	**135**	2009
Zirconium hydride	**138**	1437
Zirconium nitrate	**140**	2728
Zirconium picramate, wetted with not less than 20% water	**113**	1517
Zirconium powder, dry	**135**	2008
Zirconium powder, wetted with not less than 25% water	**170**	1358
Zirconium scrap	**135**	1932
Zirconium suspended in a flammable liquid	**170**	1308
Zirconium suspended in a liquid (flammable)	**170**	1308
Zirconium tetrachloride	**137**	2503

GUIDES

GUIDE 111 Mixed Load/Unidentified Cargo

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May explode from heat, shock, friction or contamination.
- May react violently or explosively on contact with air, water or foam.
- May be ignited by heat, sparks or flames.
- Vapors may travel to source of ignition and flash back.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Inhalation, ingestion or contact with substance may cause severe injury, infection, disease or death.
- High concentration of gas may cause asphyxiation without warning.
- Contact may cause burns to skin and eyes.
- Fire or contact with water may produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it may not be effective in spill situations.

EVACUATION

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: Material may react with extinguishing agent.

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks

- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Pick up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Shower and wash with soap and water.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 112 Explosives* - Division 1.1, 1.2, 1.3 or 1.5

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **MAY EXPLODE AND THROW FRAGMENTS 1600 METERS (1 MILE) OR MORE IF FIRE REACHES CARGO.**
- **For information on "Compatibility Group" letters, refer to Glossary section.**

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- Isolate spill or leak area immediately for at least 500 meters (1/3 mile) in all directions.
- Move people out of line of sight of the scene and away from windows.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- **Consider initial EVACUATION for 800 meters (1/2 mile) in all directions.**

Fire

- If rail car or trailer is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, initiate evacuation including emergency responders for 1600 meters (1 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

* For information on "Compatibility Group" Letters, refer to the Glossary section.

EMERGENCY RESPONSE

FIRE

CARGO Fire

- **DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!**
- Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn.
- **Do not move cargo or vehicle if cargo has been exposed to heat.**

TIRE or VEHICLE Fire

- **Use plenty of water - FLOOD it! If water is not available, use CO_2, dry chemical or dirt.**
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 METERS (330 FEET) OF ELECTRIC DETONATORS.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

* FOR INFORMATION ON "COMPATIBILITY GROUP" LETTERS, REFER TO THE GLOSSARY SECTION.

GUIDE 113 Flammable Solids - Toxic (Wet/Desensitized Explosive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- **DRIED OUT material may explode if exposed to heat, flame, friction or shock; treat as an explosive (GUIDE 112).**
- **Keep material wet with water or treat as an explosive (GUIDE 112).**
- Runoff to sewer may create fire or explosion hazard.

HEALTH

- Some are toxic and may be fatal if inhaled, swallowed or absorbed through skin.
- Contact may cause burns to skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- **Consider initial EVACUATION for 500 meters (1/3 mile) in all directions.**

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

CARGO Fire

- **DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!**
- Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn.
- **Do not move cargo or vehicle if cargo has been exposed to heat.**

TIRE or VEHICLE Fire

- **Use plenty of water - FLOOD it! If water is not available, use CO_2, dry chemical or dirt.**
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.

Small Spill

- Flush area with flooding quantities of water.

Large Spill

- Wet down with water and dike for later disposal.
- KEEP “WETTED” PRODUCT WET BY SLOWLY ADDING FLOODING QUANTITIES OF WATER.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

GUIDE 114 Explosives* - Division 1.4 or 1.6

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **MAY EXPLODE AND THROW FRAGMENTS 500 METERS (1/3 MILE) OR MORE IF FIRE REACHES CARGO.**
- **For information on "Compatibility Group" letters, refer to Glossary section.**

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions.
- Move people out of line of sight of the scene and away from windows.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- **Consider initial EVACUATION for 250 meters (800 feet) in all directions.**

Fire

- If rail car or trailer is involved in a fire, ISOLATE for 500 meters (1/3 mile) in all directions; also initiate evacuation including emergency responders for 500 meters (1/3 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

* For information on "Compatibility Group" Letters, refer to the Glossary section.

EMERGENCY RESPONSE

FIRE

CARGO Fire

- **DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!**
- Stop all traffic and clear the area for at least 500 meters (1/3 mile) in all directions and let burn.
- **Do not move cargo or vehicle if cargo has been exposed to heat.**

TIRE or VEHICLE Fire

- **Use plenty of water - FLOOD it! If water is not available, use CO_2, dry chemical or dirt.**
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 METERS (330 FEET) OF ELECTRIC DETONATORS.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

SUPPLEMENTAL INFORMATION

- Packages bearing the 1.4S label or packages containing material classified as 1.4S are designed or packaged in such a manner that when involved in a fire, they may burn vigorously with localized detonations and projection of fragments.
- Effects are usually confined to immediate vicinity of packages.
- If fire threatens cargo area containing packages bearing the 1.4S label or packages containing material classified as 1.4S, consider isolating at least 15 meters (50 feet) in all directions. Fight fire with normal precautions from a reasonable distance.

* FOR INFORMATION ON "COMPATIBILITY GROUP" LETTERS, REFER TO THE GLOSSARY SECTION.

GUIDE 115 Gases - Flammable (Including Refrigerated Liquids)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **EXTREMELY FLAMMABLE.**
- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.
- Vapors from liquefied gas are initially heavier than air and spread along ground.

CAUTION: Hydrogen (UN1049), Deuterium (UN1957), Hydrogen, refrigerated liquid (UN1966) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)

- Vapors may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Some may be irritating if inhaled at high concentrations.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.
- In fires involving Liquefied Petroleum Gases (LPG) (UN1075); Butane, (UN1011); Butylene, (UN1012); Isobutylene, (UN1055); Propylene, (UN1077); Isobutane, (UN1969); and Propane, (UN1978), also refer to BLEVE – SAFETY PRECAUTIONS (Page 368)

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

CAUTION: Hydrogen (UN1049), Deuterium (UN1957) and Hydrogen, refrigerated liquid (UN1966) burn with an invisible flame. Hydrogen and Methane mixture, compressed (UN2034) may burn with an invisible flame.

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray or fog.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Prevent spreading of vapors through sewers, ventilation systems and confined areas.
- Isolate area until gas has dispersed.

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

GUIDE 116 Gases - Flammable (Unstable)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **EXTREMELY FLAMMABLE.**
- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.
- Silane (UN2203) will ignite spontaneously in air.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Some may be toxic if inhaled at high concentrations.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray or fog.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Stop leak if you can do it without risk.
- Do not touch or walk through spilled material.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

GUIDE 117 Gases - Toxic - Flammable (Extreme Hazard)

POTENTIAL HAZARDS

HEALTH

- **TOXIC; Extremely Hazardous.**
- May be fatal if inhaled or absorbed through skin.
- Initial odor may be irritating or foul and may deaden your sense of smell.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- These materials are extremely flammable.
- May form explosive mixtures with air.
- May be ignited by heat, sparks or flames.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Runoff may create fire or explosion hazard.
- Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Consider igniting spill or leak to eliminate toxic gas concerns.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **EXTREMELY FLAMMABLE.**
- May be ignited by heat, sparks or flames.
- May form explosive mixtures with air.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- May cause toxic effects if inhaled.
- Vapors are extremely irritating.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 119 Gases - Toxic - Flammable

POTENTIAL HAZARDS

HEALTH

- **TOXIC; may be fatal if inhaled or absorbed through skin.**
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Flammable; may be ignited by heat, sparks or flames.
- May form explosive mixtures with air.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.
- Runoff may create fire or explosion hazard.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

Small Fire

- Dry chemical, CO_2, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- **FOR CHLOROSILANES, DO NOT USE WATER;** use AFFF alcohol-resistant medium-expansion foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- **FOR CHLOROSILANES**, use AFFF alcohol-resistant medium-expansion foam to reduce vapors.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 120 Gases - Inert (Including Refrigerated Liquids)

POTENTIAL HAZARDS

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

FIRE OR EXPLOSION

- **Non-flammable gases.**
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids or solids.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim calm and warm.

POTENTIAL HAZARDS

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Vapors from liquefied gas are initially heavier than air and spread along ground.

FIRE OR EXPLOSION

- **Non-flammable gases.**
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Keep victim calm and warm.

GUIDE 122 Gases - Oxidizing (Including Refrigerated Liquids)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Substance does not burn but will support combustion.
- Some may react explosively with fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Runoff may create fire or explosion hazard.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 500 meters (1/3 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Isolate area until gas has dispersed.

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim calm and warm.

GUIDE 123 Gases - Toxic and/or Corrosive

POTENTIAL HAZARDS

HEALTH

- **TOXIC; may be fatal if inhaled or absorbed through skin.**
- Vapors may be irritating.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray, fog or regular foam.
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 124 Gases - Toxic and/or Corrosive - Oxidizing

POTENTIAL HAZARDS

HEALTH

- **TOXIC; may be fatal if inhaled or absorbed through skin.**
- Fire will produce irritating, corrosive and/or toxic gases.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Substance does not burn but will support combustion.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- These are strong oxidizers and will react vigorously or explosively with many materials including fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Some will react violently with air, moist air and/or water.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

CAUTION: These materials do not burn but will support combustion. Some will react violently with water.

- Contain fire and let burn. If fire must be fought, water spray or fog is recommended.
- **Water only; no dry chemical, CO_2 or Halon®.**
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Ventilate the area.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

POTENTIAL HAZARDS

HEALTH

- **TOXIC; may be fatal if inhaled, ingested or absorbed through skin.**
- Vapors are extremely irritating and corrosive.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.
- For UN1005: Anhydrous ammonia, at high concentrations in confined spaces, presents a flammability risk if a source of ignition is introduced.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Do not get water inside containers.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- **In case of contact with Hydrogen fluoride, anhydrous (UN1052),** flush with large amounts of water. For skin contact, if calcium gluconate gel is available, rinse 5 minutes, then apply gel. Otherwise, continue rinsing until medical treatment is available. For eyes, flush with water or a saline solution for 15 minutes.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 126 Gases - Compressed or Liquefied (Including Refrigerant Gases)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 500 meters (1/3 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- Some of these materials, if spilled, may evaporate leaving a flammable residue.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim calm and warm.

GUIDE 127 Flammable Liquids (Water-Miscible)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

CAUTION: For fire involving UN1170, UN1987 or UN3475, alcohol-resistant foam should be used.

Small Fire

- Dry chemical, CO_2, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- **Do not use straight streams**.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor-suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

GUIDE 128 Flammable Liquids (Water-Immiscible)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.
- Substance may be transported hot.
- For hybrid vehicles, GUIDE 147 (lithium ion batteries) or GUIDE 138 (sodium batteries) should also be consulted.
- **If molten aluminum is involved, refer to GUIDE 169.**

HEALTH

- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

CAUTION: For mixtures containing alcohol or polar solvent, alcohol-resistant foam may be more effective.

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- **Do not use straight streams**.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor-suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

GUIDE 129 Flammable Liquids (Water-Miscible/Noxious)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- May cause toxic effects if inhaled or absorbed through skin.
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Small Fire

- Dry chemical, CO_2, water spray or alcohol-resistant foam.
- **Do not use dry chemical extinguishers to control fires involving nitromethane (UN1261) or nitroethane (UN2842).**

Large Fire

- Water spray, fog or alcohol-resistant foam.
- **Do not use straight streams.**
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor-suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 130 Flammable Liquids (Water-Immiscible/Noxious)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- May cause toxic effects if inhaled or absorbed through skin.
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- **Do not use straight streams.**
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor-suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 131 Flammable Liquids - Toxic

POTENTIAL HAZARDS

HEALTH

- **TOXIC; may be fatal if inhaled, ingested or absorbed through skin.**
- Inhalation or contact with some of these materials will irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion and poison hazard indoors, outdoors or in sewers.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Small Fire

- Dry chemical, CO_2, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor-suppressing foam may be used to reduce vapors.

Small Spill

- Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 132 Flammable Liquids - Corrosive

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- May cause toxic effects if inhaled or ingested/swallowed.
- Contact with substance may cause severe burns to skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **Some of these materials may react violently with water.**

Small Fire

- Dry chemical, CO_2, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Do not get water inside containers.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor-suppressing foam may be used to reduce vapors.
- Absorb with earth, sand or other non-combustible material and transfer to containers (except for Hydrazine).
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor, but may not prevent ignition in closed spaces.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 133 FLAMMABLE SOLIDS

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May be ignited by friction, heat, sparks or flames.
- Some may burn rapidly with flare-burning effect.
- Powders, dusts, shavings, borings, turnings or cuttings may explode or burn with explosive violence.
- Substance may be transported in a molten form at a temperature that may be above its flash point.
- May re-ignite after fire is extinguished.

HEALTH

- Fire may produce irritating and/or toxic gases.
- Contact may cause burns to skin and eyes.
- Contact with molten substance may cause severe burns to skin and eyes.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2, sand, earth, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

Fire Involving Metal Pigments or Pastes (e.g. "Aluminum Paste")

- Aluminum Paste fires should be treated as a combustible metal fire. Use DRY sand, graphite powder, dry sodium chloride-based extinguishers, G-1® or Met-L-X® powder.
  Also, see GUIDE 170.

Fire involving Tanks or Car/Trailer Loads

- Cool containers with flooding quantities of water until well after fire is out.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.

Small Dry Spill

- With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

Large Spill

- Wet down with water and dike for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Removal of solidified molten material from skin requires medical assistance.
- Keep victim calm and warm.

GUIDE 134 Flammable Solids - Toxic and/or Corrosive

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.

HEALTH

- **TOXIC;** inhalation, ingestion or skin contact with material may cause severe injury or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.
- Do not get water inside containers.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Prevent entry into waterways, sewers, basements or confined areas.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 135 Substances - Spontaneously Combustible

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Flammable/combustible material.
- May ignite on contact with moist air or moisture.
- May burn rapidly with flare-burning effect.
- Some react vigorously or explosively on contact with water.
- Some may decompose explosively when heated or involved in a fire.
- May re-ignite after fire is extinguished.
- Runoff may create fire or explosion hazard.
- Containers may explode when heated.

HEALTH

- Fire will produce irritating, corrosive and/or toxic gases.
- Inhalation of decomposition products may cause severe injury or death.
- Contact with substance may cause severe burns to skin and eyes.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **DO NOT USE WATER, CO_2 OR FOAM ON MATERIAL ITSELF.**
- Some of these materials may react violently with water.

EXCEPTION: For Xanthates, UN3342 and for Dithionite (Hydrosulfite/Hydrosulphite) UN1384, UN1923 and UN1929, USE FLOODING AMOUNTS OF WATER for SMALL AND LARGE fires to stop the reaction. Smothering will not work for these materials, they do not need air to burn.

Small Fire

- Dry chemical, soda ash, lime or DRY sand, **EXCEPT for UN1384, UN1923, UN1929 and UN3342**.

Large Fire

- DRY sand, dry chemical, soda ash or lime **EXCEPT for UN1384, UN1923, UN1929 and UN3342**, or withdraw from area and let fire burn.
- **CAUTION**: **UN3342** when flooded with water will continue to evolve flammable Carbon disulfide/Carbon disulphide vapors.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers or in contact with substance.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

Small Spill

EXCEPTION: For spills of Xanthates, UN3342 and for Dithionite (Hydrosulfite/Hydrosulphite), UN1384, UN1923 and UN1929, dissolve in 5 parts water and collect for proper disposal.

- **CAUTION**: **UN3342** when flooded with water will continue to evolve flammable Carbon disulfide/Carbon disulphide vapors.
- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 136 Substances - Spontaneously Combustible - Toxic and/or Corrosive (Air-Reactive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Extremely flammable; will ignite itself if exposed to air.
- Burns rapidly, releasing dense, white, irritating fumes.
- Substance may be transported in a molten form.
- May re-ignite after fire is extinguished.
- Corrosive substances in contact with metals may produce flammable hydrogen gas.
- Containers may explode when heated.

HEALTH

- Fire will produce irritating, corrosive and/or toxic gases.
- **TOXIC**; ingestion of substance or inhalation of decomposition products will cause severe injury or death.
- Contact with substance may cause severe burns to skin and eyes.
- Some effects may be experienced due to skin absorption.
- Runoff from fire control may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- **For Phosphorus (UN1381): Special aluminized protective clothing should be worn when direct contact with the substance is possible.**

EVACUATION

Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Water spray, wet sand or wet earth.

Large Fire

- Water spray or fog.
- **Do not scatter spilled material with high-pressure water streams.**
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.

Small Spill

- Cover with water, sand or earth. Shovel into metal container and keep material under water.

Large Spill

- Dike for later disposal and cover with wet sand or earth.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, keep exposed skin areas immersed in water or covered with wet bandages until medical attention is received.
- Removal of solidified molten material from skin requires medical assistance.
- Remove and isolate contaminated clothing and shoes at the site and place in metal container filled with water. Fire hazard if allowed to dry.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Keep victim calm and warm.

POTENTIAL HAZARDS

HEALTH

- CORROSIVE and/or TOXIC; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Contact with molten substance may cause severe burns to skin and eyes.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- **EXCEPT FOR ACETIC ANHYDRIDE (UN1715), THAT IS FLAMMABLE,** some of these materials may burn, but none ignite readily.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Substance will react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Flammable/toxic gases may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.
- Substance may be transported in a molten form.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **When material is not involved in fire, do not use water on material itself.**

Small Fire

- Dry chemical or CO_2.
- Move containers from fire area if you can do it without risk.

Large Fire

- Flood fire area with large quantities of water, while knocking down vapors with water fog. If insufficient water supply: knock down vapors only.

Fire involving Tanks or Car/Trailer Loads

- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Removal of solidified molten material from skin requires medical assistance.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 138 Substances - Water-Reactive (Emitting Flammable Gases)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Produce flammable gases on contact with water.
- May ignite on contact with water or moist air.
- Some react vigorously or explosively on contact with water.
- May be ignited by heat, sparks or flames.
- May re-ignite after fire is extinguished.
- Some are transported in highly flammable liquids.
- Runoff may create fire or explosion hazard.

HEALTH

- Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death.
- May produce corrosive solutions on contact with water.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate the area before entry.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **DO NOT USE WATER OR FOAM.**

Small Fire

- Dry chemical, soda ash, lime or sand.

Large Fire

- DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
- Move containers from fire area if you can do it without risk.

Fire Involving Metals or Powders (Aluminum, Lithium, Magnesium, etc.)

- Use dry chemical, DRY sand, sodium chloride powder, graphite powder or Met-L-X® powder; in addition, for Lithium you may use Lith-X® powder or copper powder.
  Also, see GUIDE 170.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- **DO NOT GET WATER on spilled substance or inside containers.**

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Dike for later disposal; do not apply water unless directed to do so.

Powder Spill

- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 139 Substances - Water-Reactive (Emitting Flammable And Toxic Gases)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Produce flammable and toxic gases on contact with water.
- May ignite on contact with water or moist air.
- Some react vigorously or explosively on contact with water.
- May be ignited by heat, sparks or flames.
- May re-ignite after fire is extinguished.
- Some are transported in highly flammable liquids.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Highly toxic: contact with water produces toxic gas, may be fatal if inhaled.
- Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death.
- May produce corrosive solutions on contact with water.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate the area before entry.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **DO NOT USE WATER OR FOAM. (FOAM MAY BE USED FOR CHLOROSILANES, SEE BELOW)**

Small Fire

- Dry chemical, soda ash, lime or sand.

Large Fire

- DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
- **FOR CHLOROSILANES, DO NOT USE WATER**; use AFFF alcohol-resistant medium-expansion foam; **DO NOT USE** dry chemicals, soda ash or lime on chlorosilane fires (large or small) as they may release large quantities of hydrogen gas that may explode.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- **DO NOT GET WATER on spilled substance or inside containers.**
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- **FOR CHLOROSILANES**, use AFFF alcohol-resistant medium-expansion foam to reduce vapors.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Dike for later disposal; do not apply water unless directed to do so.

Powder Spill

- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- These substances will accelerate burning when involved in a fire.
- Some may decompose explosively when heated or involved in a fire.
- May explode from heat or contamination.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Inhalation, ingestion or contact (skin, eyes) with vapors or substance may cause severe injury, burns or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Use water. Do not use dry chemicals or foams. CO_2 or Halon® may provide limited control.

Large Fire

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Do not get water inside containers.

Small Dry Spill

- With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

Small Liquid Spill

- Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- **Following product recovery, flush area with water.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- These substances will accelerate burning when involved in a fire.
- May explode from heat or contamination.
- Some may burn rapidly.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Toxic by ingestion.
- Inhalation of dust is toxic.
- Fire may produce irritating, corrosive and/or toxic gases.
- Contact with substance may cause severe burns to skin and eyes.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Use water. Do not use dry chemicals or foams. CO_2 or Halon® may provide limited control.

Large Fire

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.

Small Dry Spill

- With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

Large Spill

- Dike far ahead of spill for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 142 Oxidizers - Toxic (Liquid)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- These substances will accelerate burning when involved in a fire.
- May explode from heat or contamination.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- **TOXIC;** inhalation, ingestion or contact (skin, eyes) with vapors or substance may cause severe injury, burns or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Toxic/flammable fumes may accumulate in confined areas (basement, tanks, tank cars, etc.).
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Use water. Do not use dry chemicals or foams. CO_2 or Halon® may provide limited control.

Large Fire

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift.
- Do not get water inside containers.

Small Liquid Spill

- Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 143 Oxidizers (Unstable)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May explode from friction, heat or contamination.
- These substances will accelerate burning when involved in a fire.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Some will react explosively with hydrocarbons (fuels).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- **TOXIC;** inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Fire may produce irritating and/or toxic gases.
- Toxic fumes or dust may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Use water. Do not use dry chemicals or foams. CO_2 or Halon® may provide limited control.

Large Fire

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.
- Do not get water inside containers: a violent reaction may occur.

Fire involving Tanks or Car/Trailer Loads

- Cool containers with flooding quantities of water until well after fire is out.
- Dike fire-control water for later disposal.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Use water spray to reduce vapors or divert vapor cloud drift.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Flush area with flooding quantities of water.

Large Spill

- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 144 Oxidizers (Water-Reactive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May ignite combustibles (wood, paper, oil, clothing, etc.).
- React vigorously and/or explosively with water.
- Produce toxic and/or corrosive substances on contact with water.
- Flammable/toxic gases may accumulate in tanks and hopper cars.
- Some may produce flammable hydrogen gas upon contact with metals.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- **TOXIC;** inhalation or contact with vapor, substance, or decomposition products may cause severe injury or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **DO NOT USE WATER OR FOAM.**

Small Fire

- Dry chemical, soda ash or lime.

Large Fire

- DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- **DO NOT GET WATER on spilled substance or inside containers.**

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

Large Spill

- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 145 Organic Peroxides (Heat and Contamination Sensitive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May explode from heat or contamination.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare-burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.
- Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial evacuation for at least 250 meters (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Water spray or fog is preferred; if water not available use dry chemical, CO_2 or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Use water spray or fog; do not use straight streams.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Keep substance wet using water spray.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.

Large Spill

- Wet down with water and dike for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- Remove material from skin immediately.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 146 Organic Peroxides (Heat, Contamination and Friction Sensitive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May explode from heat, shock, friction or contamination.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare-burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.
- Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial evacuation for at least 250 meters (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Water spray or fog is preferred; if water not available use dry chemical, CO_2 or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Use water spray or fog; do not use straight streams.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Keep substance wet using water spray.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.

Large Spill

- Wet down with water and dike for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- Remove material from skin immediately.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (> 150 ^{0}C (302 ^{0}F)), when damaged or abused (e.g., mechanical damage or electrical overcharging).
- May burn rapidly with flare-burning effect.
- May ignite other batteries in close proximity.

HEALTH

- Contact with battery electrolyte may be irritating to skin, eyes and mucous membranes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Burning batteries may produce toxic hydrogen fluoride gas (see GUIDE 125).
- Fumes may cause dizziness or suffocation.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If rail car or trailer is involved in a fire, ISOLATE for 500 meters (1/3 mile) in all directions; also initiate evacuation including emergency responders for 500 meters (1/3 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Absorb with earth, sand or other non-combustible material.
- Leaking batteries and contaminated absorbent material should be placed in metal containers.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

GUIDE 148 Organic Peroxides (Heat and Contamination Sensitive/Temperature Controlled)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May explode from heat, contamination or loss of temperature control.
- These materials are particularly sensitive to temperature rises. Above a given "Control Temperature" they decompose violently and catch fire.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May ignite spontaneously if exposed to air.
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare-burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.
- Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- **DO NOT allow the substance to warm up. Obtain liquid nitrogen (wear thermal protective clothing, see GUIDE 120), dry ice or ice for cooling. If this is not possible or none can be obtained, evacuate the area immediately.**

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial evacuation for at least 250 meters (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **The temperature of the substance must be maintained at or below the "Control Temperature" at all times.**

Small Fire

- Water spray or fog is preferred; if water not available use dry chemical, CO_2 or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Use water spray or fog; do not use straight streams.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- **BEWARE OF POSSIBLE CONTAINER EXPLOSION.**
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- Remove material from skin immediately.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 149 Substances (Self-Reactive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **Self-decomposition, self-polymerization, or self-ignition may be triggered by heat, chemical reaction, friction or impact.**
- May be ignited by heat, sparks or flames.
- Some may decompose explosively when heated or involved in a fire.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- May burn violently. Decomposition or polymerization may be self-accelerating and produce large amounts of gases.
- Vapors or dust may form explosive mixtures with air.

HEALTH

- Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death.
- May produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial evacuation for at least 250 meters (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- **BEWARE OF POSSIBLE CONTAINER EXPLOSION.**
- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 150 Substances (Self-Reactive/ Temperature Controlled)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **Self-decomposition, self-polymerization, or self-ignition may be triggered by heat, chemical reaction, friction or impact.**
- Self-accelerating decomposition may occur if the specific control temperature is not maintained.
- These materials are particularly sensitive to temperature rises. Above a given "Control Temperature" they decompose or polymerize violently and may catch fire.
- May be ignited by heat, sparks or flames.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Some may decompose explosively when heated or involved in a fire.
- May burn violently. Decomposition or polymerization may be self-accelerating and produce large amounts of gases.
- Vapors or dust may form explosive mixtures with air.

HEALTH

- Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death.
- May produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- **DO NOT allow the substance to warm up. Obtain liquid nitrogen (wear thermal protective clothing, see GUIDE 120), dry ice or ice for cooling. If this is not possible or none can be obtained, evacuate the area immediately.**

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial evacuation for at least 250 meters (800 feet) in all directions.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **The temperature of the substance must be maintained at or below the "Control Temperature" at all times.**

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Flood fire area with water from a distance.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- **BEWARE OF POSSIBLE CONTAINER EXPLOSION.**
- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

Small Spill

- Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 151 Substances - Toxic (Non-Combustible)

POTENTIAL HAZARDS

HEALTH

- **Highly toxic**, may be fatal if inhaled, swallowed or absorbed through skin.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Containers may explode when heated.
- Runoff may pollute waterways.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2 or water spray.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Cover with plastic sheet to prevent spreading.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 152 Substances - Toxic (Combustible)

POTENTIAL HAZARDS

HEALTH

- **Highly toxic,** may be fatal if inhaled, swallowed or absorbed through skin.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Combustible material: may burn but does not ignite readily.
- Containers may explode when heated.
- Runoff may pollute waterways.
- Substance may be transported in a molten form.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2 or water spray.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Cover with plastic sheet to prevent spreading.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 153 Substances - Toxic and/or Corrosive (Combustible)

POTENTIAL HAZARDS

HEALTH

- **TOXIC**; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Combustible material: may burn but does not ignite readily.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.
- Runoff may pollute waterways.
- Substance may be transported in a molten form.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2 or water spray.

Large Fire

- Dry chemical, CO_2, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 154 Substances - Toxic and/or Corrosive (Non-Combustible)

POTENTIAL HAZARDS

HEALTH

- **TOXIC**; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some are oxidizers and may ignite combustibles (wood, paper, oil, clothing, etc.).
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.
- For electric vehicles or equipment, GUIDE 147 (lithium ion batteries) or GUIDE 138 (sodium batteries) should also be consulted.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2 or water spray.

Large Fire

- Dry chemical, CO_2, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 155 Substances - Toxic and/or Corrosive (Flammable/Water-Sensitive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapors may travel to source of ignition and flash back.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

HEALTH

- **TOXIC**; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- **Bromoacetates and chloroacetates are extremely irritating/lachrymators.**
- Reaction with water or moist air will release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- Note: Most foams will react with the material and release corrosive/toxic gases.

CAUTION: For Acetyl chloride (UN1717), use CO_2 or dry chemical only.

Small Fire

- CO_2, dry chemical, dry sand, alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- **FOR CHLOROSILANES, DO NOT USE WATER**; use AFFF alcohol-resistant medium-expansion foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapor-suppressing foam may be used to reduce vapors.
- **FOR CHLOROSILANES**, use AFFF alcohol-resistant medium-expansion foam to reduce vapors.
- **DO NOT GET WATER on spilled substance or inside containers.**
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 156 Substances - Toxic and/or Corrosive (Combustible/Water-Sensitive)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Combustible material: may burn but does not ignite readily.
- Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapors may travel to source of ignition and flash back.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

HEALTH

- **TOXIC;** inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Reaction with water or moist air will release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- Note: Most foams will react with the material and release corrosive/toxic gases.

Small Fire

- CO_2, dry chemical, dry sand, alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- **FOR CHLOROSILANES, DO NOT USE WATER**; use AFFF alcohol-resistant medium-expansion foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapor-suppressing foam may be used to reduce vapors.
- **FOR CHLOROSILANES**, use AFFF alcohol-resistant medium-expansion foam to reduce vapors.
- **DO NOT GET WATER on spilled substance or inside containers.**
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

GUIDE 157 Substances - Toxic and/or Corrosive (Non-Combustible/Water-Sensitive)

POTENTIAL HAZARDS

HEALTH

- **TOXIC**; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Reaction with water or moist air may release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- For UN1796, UN1826, UN2031 at high concentrations and for UN2032, these may act as oxidizers, also consult GUIDE 140.
- Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- Note: Some foams will react with the material and release corrosive/toxic gases.

Small Fire

- CO_2 (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapor-suppressing foam may be used to reduce vapors.
- DO NOT GET WATER INSIDE CONTAINERS.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- **In case of contact with Hydrofluoric acid (UN1790)**, flush with large amounts of water. For skin contact, if calcium gluconate gel is available, rinse 5 minutes, then apply gel. Otherwise, continue rinsing until medical treatment is available. For eyes, flush with water or a saline solution for 15 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

POTENTIAL HAZARDS

HEALTH

- Inhalation or contact with substance may cause infection, disease or death.
- Category A Infections Substances (UN2814 or UN2900) are more hazardous, or are in a more hazardous form, than infectious substances shipped as Category B Biological Substances (UN3373) or clinical waste / medical waste (UN3291).
- Runoff from fire control may cause environmental contamination.
- **Note: Damaged packages containing solid CO_2 as a refrigerant may produce water or frost from condensation of air. Do not touch this solid or liquid as it could be contaminated by the contents of the parcel.**
- Contact with solid CO_2 may cause burns, severe injury and/or frostbite.

FIRE OR EXPLOSION

- Some of these materials may burn, but none ignite readily.
- Some may be transported in flammable liquids.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Identify the substance involved.

PROTECTIVE CLOTHING

- Wear respiratory protection, such as fit-tested N95 respirator (at minimum), powered air purifying respirator (PAPR), or positive pressure self-contained breathing apparatus (SCBA).
- Wear full coverage body protection (e.g., Tyvek suit), faceshield, and disposable fluid-resistant gloves (e.g., latex or nitrile).
- Wear appropriate footwear; disposable shoe covers can be worn to protect against contamination.
- Puncture- and cut-resistant gloves should be worn over fluid-resistant gloves if sharp objects (e.g., broken glass, needles) are present.
- Wear insulated gloves (e.g. cryo gloves) over fluid-resistant gloves when handling dry ice (UN1845).
- Decontaminate protective clothing and personal protective equipment after use and before cleaning or disposal with an appropriate chemical disinfectant (e.g., 10% solution of bleach, equivalent to 0.5% sodium hypochlorite) or through a validated decontamination technology (e.g., autoclave) or process.
- Structural firefighters' protective clothing will only provide limited protection.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, soda ash, lime or sand.

Large Fire

- Use extinguishing agent suitable for type of surrounding fire.
- Do not scatter spilled material with high-pressure water streams.
- Move containers from fire area if you can do it without risk.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Absorb with earth, sand or other non-combustible material.
- Cover damaged package or spilled material with absorbent material such as paper towel, towel or rag to absorb any liquids, and, beginning from outside edge, pour liquid bleach or other chemical disinfectant to saturate. Keep wet with liquid bleach or other disinfectant.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to a safe isolated area.

CAUTION: Victim may be a source of contamination.

- Call 911 or emergency medical service.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Effects of exposure (inhalation, ingestion, injection/inoculation or skin contact) to substance may be delayed. Victim should consult medical professional for information regarding symptoms and treatment.
- **For further assistance, contact your local Poison Control Center.**

GUIDE 159 Substances (Irritating)

POTENTIAL HAZARDS

HEALTH

- Inhalation of vapors or dust is extremely irritating.
- May cause burning of eyes and flow of tears.
- May cause coughing, difficult breathing and nausea.
- Brief exposure effects last only a few minutes.
- Exposure in an enclosed area may be very harmful.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- Some of these materials may burn, but none ignite readily.
- Containers may explode when heated.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.

Small Spill

- Pick up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects should disappear after individual has been exposed to fresh air for approximately 10 minutes.

POTENTIAL HAZARDS

HEALTH

- Toxic by ingestion.
- Vapors may cause dizziness or suffocation.
- Exposure in an enclosed area may be very harmful.
- Contact may irritate or burn skin and eyes.
- Fire may produce irritating and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- Some of these materials may burn, but none ignite readily.
- Most vapors are heavier than air.
- Air/vapor mixtures may explode when ignited.
- Container may explode in heat of fire.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2 or water spray.

Large Fire

- Dry chemical, CO_2, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Stop leak if you can do it without risk.

Small Liquid Spill

- Pick up with sand, earth or other non-combustible absorbent material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Wash skin with soap and water.
- Keep victim calm and warm.

GUIDE 161 Radioactive Materials (Low Level Radiation)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Very low levels of contained radioactive materials and low radiation levels outside packages result in low risks to people. Damaged packages may release measurable amounts of radioactive material, but the resulting risks are expected to be low.
- Some radioactive materials cannot be detected by commonly available instruments.
- Packages do not have RADIOACTIVE I, II, or III labels. Some may have EMPTY labels or may have the word "Radioactive" in the package marking.

FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Many have cardboard outer packaging; content (physically large or small) can be of many different physical forms.
- Radioactivity does not change flammability or other properties of materials.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.
- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

GUIDE 162 Radioactive Materials (Low to Moderate Level Radiation)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Low radiation hazard when material is inside container. If material is released from package or bulk container, hazard will vary from low to moderate. Level of hazard will depend on the type and amount of radioactivity, the kind of material it is in, and/or the surfaces it is on.
- Some material may be released from packages during accidents of moderate severity but risks to people are not great.
- Released radioactive materials or contaminated objects usually will be visible if packaging fails.
- Some exclusive use shipments of bulk and packaged materials will not have "RADIOACTIVE" labels. Placards, markings and shipping papers provide identification.
- Some packages may have a "RADIOACTIVE" label and a second hazard label. The second hazard is usually greater than the radiation hazard; so follow this GUIDE as well as the response GUIDE for the second hazard class label.
- Some radioactive materials cannot be detected by commonly available instruments.
- Runoff from control of cargo fire may cause low-level pollution.

FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Uranium and Thorium metal cuttings may ignite spontaneously if exposed to air (see GUIDE 136).
- Nitrates are oxidizers and may ignite other combustibles (see GUIDE 141).

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).
- Dike fire-control water for later disposal.

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.
- Dike to collect large liquid spills.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

GUIDE 163 Radioactive Materials (Low to High Level Radiation)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Type A packages (cartons, boxes, drums, articles, etc.) identified as "Type A" by marking on packages or by shipping papers contain non-life-endangering amounts. Partial releases might be expected if "Type A" packages are damaged in moderately severe accidents.
- Type B packages, and the rarely occurring Type C packages (large and small, usually metal), contain the most hazardous amounts. They can be identified by package markings or by shipping papers. Life-threatening conditions may exist only if contents are released or package shielding fails. Because of design, evaluation and testing of packages, these conditions would be expected only for accidents of utmost severity.
- The rarely occurring "Special Arrangement" shipments may be of Type A, Type B or Type C packages. Package type will be marked on packages, and shipment details will be on shipping papers.
- Radioactive White-I labels indicate radiation levels outside single, isolated, undamaged packages are very low (less than 0.005 mSv/h (0.5 mrem/h)).
- Radioactive Yellow-II and Yellow-III labeled packages have higher radiation levels. The transport index (TI) on the label identifies the maximum radiation level in mrem/h one meter from a single, isolated, undamaged package.
- Some radioactive materials cannot be detected by commonly available instruments.
- Water from cargo fire control may cause pollution.

FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Radioactivity does not change flammability or other properties of materials.
- Type B packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. • Stay upwind, uphill and/or upstream. • Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).
- Dike fire-control water for later disposal.

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Most packaging for liquid content have inner containers and/or inner absorbent materials.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

GUIDE 164 Radioactive Materials (Special Form/ Low to High Level External Radiation)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe; contents of damaged packages may cause external radiation exposure, and much higher external exposure if contents (source capsules) are released.
- Contamination and internal radiation hazards are not expected, but not impossible.
- Type A packages (cartons, boxes, drums, articles, etc.) identified as "Type A" by marking on packages or by shipping papers contain non-life-endangering amounts. Radioactive sources may be released if "Type A" packages are damaged in moderately severe accidents.
- Type B packages, and the rarely occurring Type C packages, (large and small, usually metal) contain the most hazardous amounts. They can be identified by package markings or by shipping papers. Life-threatening conditions may exist only if contents are released or package shielding fails. Because of design, evaluation and testing of packages, these conditions would be expected only for accidents of utmost severity.
- Radioactive White-I labels indicate radiation levels outside single, isolated, undamaged packages are very low (less than 0.005 mSv/h (0.5 mrem/h)).
- Radioactive Yellow-II and Yellow-III labeled packages have higher radiation levels. The transport index (TI) on the label identifies the maximum radiation level in mrem/h one meter from a single, isolated, undamaged package.
- Radiation from the package contents, usually in durable metal capsules, can be detected by most radiation instruments.
- Water from cargo fire control is not expected to cause pollution.

FIRE OR EXPLOSION

- Packagings can burn completely without risk of content loss from sealed source capsule.
- Radioactivity does not change flammability or other properties of materials.
- Radioactive source capsules and Type B packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Delay final cleanup until instructions or advice is received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Contents are seldom liquid. Content is usually a metal capsule, easily seen if released from package.
- If source capsule is identified as being out of package, **DO NOT TOUCH**. Stay away and await advice from Radiation Authority.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Persons exposed to special form sources are not likely to be contaminated with radioactive material.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

GUIDE 165 Radioactive Materials (Fissile/Low to High Level Radiation)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential radiation and criticality hazards of the content increase.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Type AF or IF packages, identified by package markings, do not contain life-threatening amounts of material. External radiation levels are low and packages are designed, evaluated and tested to control releases and to prevent a fission chain reaction under severe transport conditions.
- Type B(U)F, B(M)F and CF packages (identified by markings on packages or shipping papers) contain potentially life-endangering amounts. Because of design, evaluation and testing of packages, fission chain reactions are prevented and releases are not expected to be life-endangering for all accidents except those of utmost severity.
- The rarely occurring "Special Arrangement" shipments may be of Type AF, BF or CF packages. Package type will be marked on packages, and shipment details will be on shipping papers.
- The transport index (TI) shown on labels or a shipping paper might not indicate the radiation level at one meter from a single, isolated, undamaged package; instead, it might relate to controls needed during transport because of the fissile properties of the materials. Alternatively, the fissile nature of the contents may be indicated by a criticality safety index (CSI) on a special FISSILE label or on the shipping paper.
- Some radioactive materials cannot be detected by commonly available instruments.
- Water from cargo fire control is not expected to cause pollution.

FIRE OR EXPLOSION

- These materials are seldom flammable. Packages are designed to withstand fires without damage to contents.
- Radioactivity does not change flammability or other properties of materials.
- Type AF, IF, B(U)F, B(M)F and CF packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. • Stay upwind, uphill and/or upstream. • Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Most packaging for liquid content have inner containers and/or inner absorbent materials.

Liquid Spill

- Package contents are seldom liquid. If any radioactive contamination resulting from a liquid release is present, it probably will be low-level.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.

GUIDE 166 Radioactive Materials - Corrosive (Uranium Hexafluoride/Water-Sensitive)

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential radiation and criticality hazards of the content increase.
- **Chemical hazard greatly exceeds radiation hazard.**
- Substance reacts with water and water vapor in air to form **toxic and corrosive hydrogen fluoride gas** and an extremely irritating and corrosive, white-colored, water-soluble residue.
- If inhaled, may be fatal. • Direct contact causes burns to skin, eyes, and respiratory tract.
- Low-level radioactive material; very low radiation hazard to people.
- Runoff from control of cargo fire may cause low-level pollution.

FIRE OR EXPLOSION

- Substance does not burn. • The material may react violently with fuels.
- Product will decompose to produce toxic and/or corrosive fumes.
- Containers in protective overpacks (horizontal cylindrical shape with short legs for tie-downs), are identified with "AF", "B(U)F" or "H(U)" on shipping papers or by markings on the overpacks. They are designed and evaluated to withstand severe conditions including total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.
- Bare filled cylinders, identified with UN2978 as part of the marking (may also be marked H(U) or H(M)), may rupture in heat of engulfing fire; bare empty (except for residue) cylinders will not rupture in fires.
- Radioactivity does not change flammability or other properties of materials.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind, uphill and/or upstream. • Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances.

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- DO NOT USE WATER OR FOAM ON MATERIAL ITSELF.
- Move containers from fire area if you can do it without risk.

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray, fog or regular foam.
- Cool containers with flooding quantities of water until well after fire is out.
- If this is impossible, withdraw from area and let fire burn.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- DO NOT GET WATER INSIDE CONTAINERS.
- Without fire or smoke, leak will be evident by visible and irritating vapors and residue forming at the point of release.
- Use fine water spray to reduce vapors; do not put water directly on point of material release from container.
- Residue buildup may self-seal small leaks.
- Dike far ahead of spill to collect runoff water.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves.
- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- **In case of contact with Hydrofluoric acid (UN1790)**, flush with large amounts of water. For skin contact, if calcium gluconate gel is available, rinse 5 minutes, then apply gel. Otherwise, continue rinsing until medical treatment is available. For eyes, flush with water or a saline solution for 15 minutes.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Keep victim calm and warm.

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GUIDE 168 Carbon Monoxide (Refrigerated Liquid)

POTENTIAL HAZARDS

HEALTH

- **TOXIC; Extremely Hazardous.**
- Inhalation extremely dangerous; may be fatal.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Odorless, will not be detected by sense of smell.

FIRE OR EXPLOSION

- **EXTREMELY FLAMMABLE.**
- May be ignited by heat, sparks or flames.
- Flame may be invisible.
- Containers may explode when heated.
- Vapor explosion and poison hazard indoors, outdoors or in sewers.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Runoff may create fire or explosion hazard.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

Small Fire

- Dry chemical, CO_2 or water spray.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 169 Aluminum (Molten)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Substance is transported in molten form at a temperature above 705°C (1300°F).
- Violent reaction with water; contact may cause an explosion or may produce a flammable gas.
- Will ignite combustible materials (wood, paper, oil, debris, etc.).
- Contact with nitrates or other oxidizers may cause an explosion.
- Contact with containers or other materials, including cold, wet or dirty tools, may cause an explosion.
- Contact with concrete will cause spalling and small pops.

HEALTH

- Contact causes severe burns to skin and eyes.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear flame-retardant structural firefighters' protective clothing, including faceshield, helmet and gloves, as this will provide limited thermal protection.

EMERGENCY RESPONSE

FIRE

- **Do Not Use Water, except in life-threatening situations and then only in a fine spray.**
- **Do not use halogenated extinguishing agents or foam.**
- Move combustibles out of path of advancing pool if you can do so without risk.
- Extinguish fires started by molten material by using appropriate method for the burning material; keep water, halogenated extinguishing agents and foam away from the molten material.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Do not attempt to stop leak, due to danger of explosion.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Substance is very fluid, spreads quickly, and may splash. Do not try to stop it with shovels or other objects.
- Dike far ahead of spill; use dry sand to contain the flow of material.
- Where possible allow molten material to solidify naturally.
- Avoid contact even after material solidifies. Molten, heated and cold aluminum look alike; do not touch unless you know it is cold.
- Clean up under the supervision of an expert after material has solidified.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- For severe burns, immediate medical attention is required.
- Removal of solidified molten material from skin requires medical assistance.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 170 Metals (Powders, Dusts, Shavings, Borings, Turnings, or Cuttings, etc.)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- May react violently or explosively on contact with water.
- Some are transported in flammable liquids.
- May be ignited by friction, heat, sparks or flames.
- Some of these materials will burn with intense heat.
- Dusts or fumes may form explosive mixtures in air.
- Containers may explode when heated.
- May re-ignite after fire is extinguished.

HEALTH

- Oxides from metallic fires are a severe health hazard.
- Inhalation or contact with substance or decomposition products may cause severe injury or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 50 meters (160 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

EMERGENCY RESPONSE

FIRE

- **DO NOT USE WATER, FOAM OR CO_2.**
- Dousing metallic fires with water will generate hydrogen gas, an extremely dangerous explosion hazard, particularly if fire is in a confined environment (i.e., building, cargo hold, etc.).
- Use DRY sand, graphite powder, dry sodium chloride-based extinguishers, G-1® or Met-L-X® powder.
- Confining and smothering metal fires is preferable rather than applying water.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- If impossible to extinguish, protect surroundings and allow fire to burn itself out.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Containers may explode when heated.
- Some may be transported hot.
- For UN3508, be aware of possible short circuiting as this product is transported in a charged state.

HEALTH

- Inhalation of material may be harmful.
- Contact may cause burns to skin and eyes.
- Inhalation of Asbestos dust may have a damaging effect on the lungs.
- Fire may produce irritating, corrosive and/or toxic gases.
- Some liquids produce vapors that may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Do not scatter spilled material with high-pressure water streams.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal.

Fire involving Tanks

- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Avoid inhalation of asbestos dust.

Small Dry Spill

- With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

Small Spill

- Pick up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Cover powder spill with plastic sheet or tarp to minimize spreading.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

POTENTIAL HAZARDS

HEALTH

- Inhalation of vapors or contact with substance will result in contamination and potential harmful effects.
- Fire will produce irritating, corrosive and/or toxic gases.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may react upon heating to produce corrosive and/or toxic fumes.
- Runoff may pollute waterways.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Stay upwind, uphill and/or upstream.
- Keep unauthorized personnel away.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When any large container is involved in a fire, consider initial evacuation for 500 meters (1/3 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.
- **Do not direct water at the heated metal.**

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Do not use steel or aluminum tools or equipment.
- Cover with earth, sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- For mercury, use a mercury spill kit.
- Mercury spill areas may be subsequently treated with calcium sulphide/calcium sulfide or with sodium thiosulphate/sodium thiosulfate wash to neutralize any residual mercury.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim calm and warm.

GUIDE 173 Adsorbed Gases - Toxic*

POTENTIAL HAZARDS

HEALTH

- **TOXIC; may be fatal if inhaled or absorbed through skin.**
- Vapors may be irritating.
- Contact with gas may cause burns and injury.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Some gases may burn or be ignited by heat, sparks or flames but NOT readily due to low transportation pressures.
- May form explosive mixtures with air.
- Oxidizers may ignite combustibles (wood, paper, oil, clothing, etc.) but NOT readily due to low transportation pressures.
- Vapors may travel to source of ignition and flash back.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.
- Runoff may create fire hazard.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances.

Fire

- If several small packages (rail or trailer) are involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping document and/or the ERAP Program Section (page 391).

* Some substances may also be flammable, corrosive and/or oxidizing

EMERGENCY RESPONSE

FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

Small Fire

- Dry chemical, CO_2, water spray or alcohol-resistant foam.
- For UN3515, UN3518, UN3520, **use water only; no dry chemical, CO_2 or Halon®**.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Several Small Packages (rail or trailer)

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Some gases may be flammable. ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- For flammable gases, all equipment used when handling the product must be grounded.
- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- For oxidizing substances, keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

GUIDE 174 Adsorbed Gases - Flammable or Oxidizing

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some gases will be ignited by heat, sparks or flames but NOT readily due to low transportation pressure.
- Substance does not burn but will support combustion.
- Vapors may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when exposed to prolonged direct flame impingement.

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Some may be irritating if inhaled at high concentrations.
- Contact with gas may cause burns and injury.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

- If several small packages (rail or trailer) are involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**
- Use extinguishing agent suitable for type of surrounding fire.

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray or fog.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Several Small Packages (rail or trailer)

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- For flammable gases, ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- For oxidizing substances, keep combustibles (wood, paper, oil, etc.) away from spilled material.
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Prevent spreading of vapors through sewers, ventilation systems and confined areas.
- Ventilate the area.
- Isolate area until gas has dispersed.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim calm and warm.

NOTES

INTRODUCTION TO GREEN TABLES - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Table 1 - Initial Isolation and Protective Action Distances suggests distances useful to protect people from vapors resulting from spills involving dangerous goods that are considered toxic by inhalation (TIH) (PIH in the US). This list includes certain chemical warfare agents and materials that produce toxic gases upon contact with water. Table 1 provides first responders with initial guidance until technically qualified emergency response personnel are available.

The **Initial Isolation Zone** defines an area SURROUNDING the incident in which persons may be exposed to dangerous (upwind) and life-threatening (downwind) concentrations of material. The **Protective Action Zone** defines an area DOWNWIND from the incident in which persons may become incapacitated and unable to take protective action and/or incur serious or irreversible health effects. Table 1 provides specific guidance for small and large spills occurring day or night.

Adjusting distances for a specific incident involves many interdependent variables and should be made only by personnel technically qualified to make such adjustments. For this reason, no precise guidance can be provided in this document to aid in adjusting the table distances; however, general guidance follows.

Factors That May Change the Protective Action Distances

The orange-bordered guide for a material clearly indicates under the section EVACUATION – Fire, the evacuation distance required to protect against fragmentation hazard of a large container. If the material becomes involved in a **FIRE**, the toxic hazard may be less than the fire or explosion hazard. In these cases, the **Fire** hazard distance should be used.

Initial isolation and protective action distances in this guidebook are derived from historical data on transportation incidents and the use of statistical models. For worst-case scenarios involving the instantaneous release of the entire contents of a package (e.g., as a result of terrorism, sabotage or catastrophic accident) the distances may increase substantially. For such events, doubling of the initial isolation and protective action distances is appropriate in absence of other information.

If more than one tank car containing TIH materials involved in the incident is leaking, LARGE SPILL distances may need to be increased.

For a material with a protective action distance of 11.0+ km (7.0+ miles), the actual distance can be larger in certain atmospheric conditions. If the dangerous goods vapor plume is channeled in a valley or between many tall buildings, distances may be larger than shown in Table 1 due to less mixing of the plume with the atmosphere. Daytime spills in regions with known strong inversions or snow cover, or occurring near sunset, may require an increase of the protective action distance because airborne contaminants mix and disperse more slowly and may travel much farther downwind. In such cases, the nighttime protective action distance may be more appropriate. In addition, protective action distances may be larger for liquid spills when either the material or outdoor temperature exceeds 30°C (86°F).

Materials which react with water to produce large amounts of toxic gases are included in Table 1 - Initial Isolation and Protective Action Distances. Note that some water-reactive materials (WRM) which are also TIH (PIH in the US) (e.g., Bromine trifluoride (UN1746), Thionyl chloride (UN1836), etc.) produce additional TIH materials when spilled in water. For these materials, two entries are provided in Table 1 - Initial Isolation and Protective Action Distances (i.e., for spills on land and for spills in water). **If it is not clear whether the spill is on land or in water, or in cases where the spill occurs both on land and in water, choose the larger Protective Action Distance**.

Following Table 1, **Table 2** – Water-Reactive Materials Which Produce Toxic Gases lists materials that produce large amounts of Toxic Inhalation Hazard gases (TIH) when spilled in water as well as the toxic gases that are produced when spilled in water.

When a water-reactive TIH-producing material is spilled into a river or stream, the source of the toxic gas may move with the current and stretch from the spill point downstream for a substantial distance.

Finally, **Table 3** lists Initial Isolation and Protective Action Distances for Toxic Inhalation Hazard materials that may be more commonly encountered.

The selected materials are:

- Ammonia, anhydrous (UN1005)
- Chlorine (UN1017)
- Ethylene oxide (UN1040)
- Hydrogen chloride, anhydrous (UN1050) and Hydrogen chloride, refrigerated liquid (UN2186)
- Hydrogen fluoride, anhydrous (UN1052)
- Sulfur dioxide/Sulphur dioxide (UN1079)

The materials are presented in alphabetical order and provide Initial Isolation and Protective Action Distances for large spills (more than 208 liters or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and for different wind speeds.

PROTECTIVE ACTION DECISION FACTORS TO CONSIDER

The choice of protective actions for a given situation depends on a number of factors. For some cases, evacuation may be the best option; in others, sheltering in-place may be the best course. Sometimes, these two actions may be used in combination. In any emergency, officials need to quickly give the public instructions. The public will need continuing information and instructions while being evacuated or sheltered in-place.

Proper evaluation of the factors listed below will determine the effectiveness of evacuation or in-place protection (shelter in-place). The importance of these factors can vary with emergency conditions. In specific emergencies, other factors may need to be identified and considered as well. This list indicates what kind of information may be needed to make the initial decision.

The Dangerous Goods

- Degree of health hazard
- Chemical and physical properties
- Amount involved
- Containment/control of release
- Rate of vapor movement

The Population Threatened

- Location
- Number of people
- Time available to evacuate or shelter in-place
- Ability to control evacuation or shelter in-place
- Building types and availability
- Special institutions or populations, e.g., nursing homes, hospitals, prisons

Weather Conditions

- Effect on vapor and cloud movement
- Potential for change
- Effect on evacuation or shelter in-place

PROTECTIVE ACTIONS

Protective Actions are those steps taken to preserve the health and safety of emergency responders and the public during an incident involving releases of dangerous goods. Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) predicts the size of downwind areas which could be affected by a cloud of toxic gas. People in this area should be evacuated and/or sheltered in-place inside buildings.

Isolate Hazard Area and Deny Entry means to keep everybody away from the area if they are not directly involved in emergency response operations. Unprotected emergency responders should not be allowed to enter the isolation zone. This "isolation" task is done first to establish control over the area of operations. This is the first step for any protective actions that may follow. See Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) for more detailed information on specific materials.

Evacuate means to move all people from a threatened area to a safer place. To perform an evacuation, there must be enough time for people to be warned, to get ready, and to leave an area. If there is enough time, evacuation is the best protective action. Begin evacuating people nearby and those outdoors in direct view of the scene. When additional help arrives, expand the area to be evacuated downwind and crosswind to at least the extent recommended in this guidebook. Even after people move to the distances recommended, they may not be completely safe from harm. They should not be permitted to congregate at such distances. Send evacuees to a definite place, by a specific route, far enough away so they will not have to be moved again if the wind shifts.

Shelter In-Place means people should seek shelter inside a building and remain inside until the danger passes. **Sheltering in-place is used when evacuating the public would cause greater risk than staying where they are, or when an evacuation cannot be performed.** Direct the people inside to **close all doors and windows** and to **shut off all ventilating, heating and cooling systems.** In-place protection (shelter in-place) may not be the best option if (a) the vapors are flammable; (b) if it will take a long time for the gas to clear the area; or (c) if buildings cannot be closed tightly. Vehicles can offer some protection for a short period if the windows are closed and the ventilating systems are shut off. Vehicles are not as effective as buildings for in-place protection.

It is vital to maintain communications with competent persons inside the building so that they are advised about changing conditions. **Persons protected-in-place should be warned to stay far from windows** because of the danger from glass and projected metal fragments in a fire and/or explosion.

Every dangerous goods incident is different. Each will have special problems and concerns. Action to protect the public must be selected carefully. These pages can help with **initial** decisions on how to protect the public. Officials must continue to gather information and monitor the situation until the threat is removed.

BACKGROUND ON TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Initial Isolation and Protective Action Distances in this guidebook were determined for small and large spills occurring during day or night. The overall analysis was statistical in nature and utilized state-of-the-art emission rate and dispersion models; statistical release data from the U.S. DOT HMIS (Hazardous Materials Information System) database; meteorological observations from over 120 locations in United States, Canada and Mexico; and the most current toxicological exposure guidelines.

For each chemical, thousands of hypothetical releases were modeled to account for the statistical variation in both release amount and atmospheric conditions. Based on this statistical sample, the 90th percentile Protective Action Distance for each chemical and category was selected to appear in the Table. A brief description of the analysis is provided below. A detailed report outlining the methodology and data used in the generation of the Initial Isolation and Protective Action Distances may be obtained from the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Release amounts and emission rates into the atmosphere were statistically modeled based on (1) data from the U.S. DOT HMIS database; (2) container types and sizes authorized for transport as specified in 49 CFR §172.101 and Part 173; (3) physical properties of the individual materials, and (4) atmospheric data from a historical database. The emission model calculated the release of vapor due to evaporation of pools on the ground, direct release of vapors from the container, or a combination of both, as would occur for liquefied gases which can flash to form both a vapor/aerosol mixture and an evaporating pool. In addition, the emission model also calculated the emission of toxic vapor by-products generated from spilling water-reactive materials in water. Spills that involve releases of approximately 208 liters for liquids (55 US gallons) and 300 kg for solids (660 lbs) or less are considered Small Spills, while spills that involve greater quantities are considered Large Spills. An exception to this is certain chemical warfare agents where Small Spills include releases up to 2 kg (4.4 lbs), and Large Spills include releases up to 25 kg (55 lbs). These agents are BZ, CX, GA, GB, GD, GF, HD, HL, HN1, HN2, HN3, L and VX.

Downwind dispersion of the vapor was estimated for each case modeled. Atmospheric parameters affecting the dispersion, and the emission rate, were selected in a statistical fashion from a database containing hourly meteorological data from 120 cities in the United States, Canada and Mexico. The dispersion calculation accounted for the time-dependent emission rate from the source as well as the density of the vapor plume (i.e., heavy gas effects). Since atmospheric mixing is less effective at dispersing vapor plumes during nighttime, day and night were separated in the analysis. In Table 1, “Day” refers to time periods after sunrise and before sunset, while “Night” includes all hours between sunset and sunrise.

Toxicological short-term exposure guidelines for the materials were applied to determine the downwind distance to which persons may become incapacitated and unable to take protective action or may incur serious health effects after a once-in-a-lifetime, or rare, exposure. When available, toxicological exposure guidelines were chosen from AEGL-2 or ERPG-2 emergency response guidelines, with AEGL-2 values being the first choice. For materials that do not have AEGL-2 or ERPG-2 values, emergency response guidelines estimated from lethal concentration limits derived from animal studies were used, as recommended by an independent panel of toxicological experts from industry and academia.

HOW TO USE TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

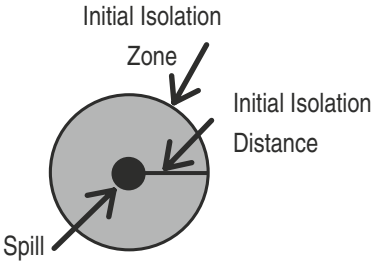
(1) The responder should already have:

- Identified the material by its ID Number and Name; (if an ID Number cannot be found, use the Name of Material index in the blue-bordered pages to locate that number.)
- Found the three-digit guide for that material in order to consult the emergency actions recommended jointly with this table;
- **Noted the wind direction.**

(2) Look in Table 1 (the green-bordered pages) for the ID Number and Name of the Material involved in the incident. Some ID Numbers have more than one shipping name listed - look for the specific name of the material. (If the shipping name is not known and Table 1 lists more than one name for the same ID Number, use the entry with the largest protective action distances.)

(3) Determine if the incident involves a SMALL or LARGE spill and if DAY or NIGHT. A SMALL SPILL consists of a release of less than 208 liters (55 US gallons). This generally corresponds to a spill from a single small package (e.g. a drum), a small cylinder, or a small leak from a large package. A LARGE SPILL consists of a release of more than 208 liters (55 US gallons). This usually involves a spill from a large package, or multiple spills from many small packages. DAY is any time after sunrise and before sunset. NIGHT is any time between sunset and sunrise.

(4) Look up the INITIAL ISOLATION DISTANCE. This distance defines the radius of a zone (Initial Isolation Zone) surrounding the spill in ALL DIRECTIONS. Within this zone, all public should be evacuated (protective clothing and respiratory protection is required in this zone). Persons should be directed to move out of the zone in a direction perpendicular to wind direction (crosswind), and away from the spill, to a minimum distance as prescribed by the Initial Isolation Distance.

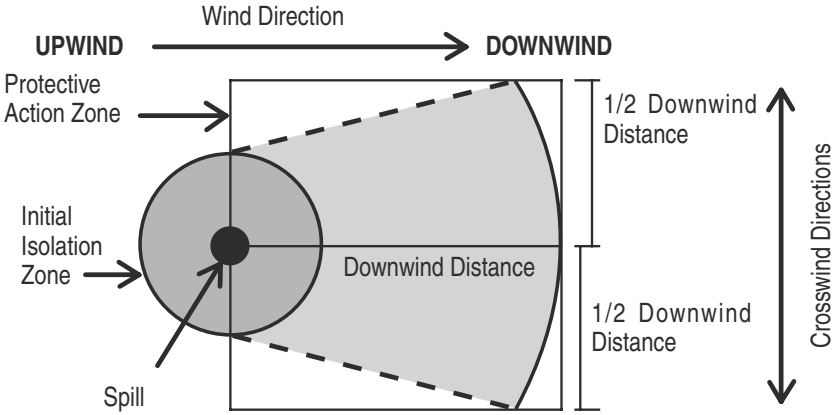


(5) Look up the initial PROTECTIVE ACTION DISTANCE. For a given material, spill size, and whether day or night, Table 1 gives the downwind distance—in kilometers and miles—from the spill/leak source for which protective actions should be considered. For practical purposes, the Protective Action Zone (i.e., the area in which people are at risk of harmful exposure) is a square, whose length and width are the same as the downwind

distance shown in Table 1. Protective actions are those steps taken to preserve the health and safety of emergency responders and the public. People in this area should be evacuated and/or sheltered-in-place.

(6) Initiate Protective Actions to the extent possible, beginning with those closest to the spill site and working away from the site in the downwind direction. When a water-reactive TIH (PIH in the US) producing material is spilled into a river or stream, the source of the toxic gas may move with the current or stretch from the spill point downstream for a substantial distance.

The shape of the area in which protective actions should be taken (the Protective Action Zone) is shown in this figure. The spill is located at the center of the small circle. The larger circle represents the INITIAL ISOLATION zone around the spill.



NOTE 1: See "Introduction To Green Tables - Initial Isolation And Protective Action Distances" under "Factors That May Change the Protective Action Distances" (page 289)

NOTE 2: When a product in Table 1 has the mention "(when spilled in water)", refer to Table 2 – Water-Reactive Materials which Produce Toxic Gases for the list of gases produced when these materials are spilled in water.

Call the emergency response telephone number listed on the shipping paper or the appropriate response agency as soon as possible for additional information on the material, safety precautions and mitigation procedures.

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during	
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)
1005 1005	**125** **125**	Ammonia, anhydrous Anhydrous ammonia	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	**Refer to table 3**		
1008 1008	**125** **125**	Boron trifluoride Boron trifluoride, compressed	30 m (100 ft)	0.1 km (0.1 mi)	0.7 km (0.4 mi)	400 m (1250 ft)	2.2 km (1.4 mi)	4.8 km (3.0 mi)
1016 1016	**119** **119**	Carbon monoxide Carbon monoxide, compressed	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.2 km (0.7 mi)	4.4 km (2.8 mi)
1017	**124**	Chlorine	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	**Refer to table 3**		
1026	**119**	Cyanogen	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)
1040 1040	**119P** **119P**	Ethylene oxide Ethylene oxide with Nitrogen	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	**Refer to table 3**		
1045 1045	**124** **124**	Fluorine Fluorine, compressed	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)
1048	**125**	Hydrogen bromide, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.6 km (1.6 mi)
1050	**125**	Hydrogen chloride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	**Refer to table 3**		
1051	**117**	AC **(when used as a weapon)**	60 m (200 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)	1000 m (3000 ft)	3.7 km (2.3 mi)	8.4 km (5.3 mi)
1051 1051 1051	**117** **117** **117**	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide Hydrogen cyanide, anhydrous, stabilized Hydrogen cyanide, stabilized	60 m (200 ft)	0.2 km (0.2 mi)	0.9 km (0.6 mi)	300 m (1000 ft)	3.7 km (0.7 mi)	2.4 km (1.5 mi)

1052	**125**	Hydrogen fluoride, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	**Refer to table 3**					
1053 1053	**117** **117**	Hydrogen sulfide Hydrogen sulphide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	400 m	(1250 ft)	2.1 km	(1.3 mi)	5.4 km	(3.4 mi)
1061	**118**	Methylamine, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.6 km	(0.4 mi)	1.9 km	(1.2 mi)
1062	**123**	Methyl bromide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	150 m	(500 ft)	0.3 km	(0.2 mi)	0.7 km	(0.4 mi)
1064	**117**	Methyl mercaptan	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	1.1 km	(0.7 mi)	3.1 km	(1.9 mi)
1067 1067	**124** **124**	Dinitrogen tetroxide Nitrogen dioxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	400 m	(1250 ft)	1.2 km	(0.8 mi)	3.0 km	(1.9 mi)
1069	**125**	Nitrosyl chloride	30 m	(100 ft)	0.2 km	(0.2 mi)	1.0 km	(0.6 mi)	500 m	(1500 ft)	3.4 km	(2.1 mi)	8.3 km	(5.2 mi)
1076	**125**	CG **(when used as a weapon)**	150 m	(500 ft)	0.8 km	(0.5 mi)	3.2 km	(2.0 mi)	1000 m	(3000 ft)	7.5 km	(4.7 mi)	11.0+ km	(7.0+ mi)
1076	**125**	DP **(when used as a weapon)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.4 mi)	200 m	(600 ft)	1.0 km	(0.7 mi)	2.4 km	(1.5 mi)
1076	**125**	Phosgene	100 m	300 ft	0.6 km	(0.4 mi)	2.5 km	(1.5 mi)	500 m	(1500 ft)	3.0 km	(1.9 mi)	9.0 km	(5.6 mi)
1079 1079	**125** **125**	Sulfur dioxide Sulphur dioxide	100 m	(300 ft)	0.7 km	(0.4 mi)	2.2 km	(1.4 mi)	**Refer to table 3**					
1082 1082	**119P** **119P**	Refrigerant gas R-1113 Trifluorochloroethylene, stabilized	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.7 km	(0.5 mi)
1092	**131P**	Acrolein, stabilized	100 m	(300 ft)	1.3 km	(0.8 mi)	3.4 km	(2.1 mi)	500 m	(1500 ft)	6.1 km	(3.8 mi)	11.0 km	(6.8 mi)
1093	**131P**	Acrylonitrile, stabilized	30 m	(100 ft)	0.2 km	(0.2 mi)	0.5 km	(0.4 mi)	100 m	(300 ft)	1.1 km	(0.7 mi)	2.1 km	(1.3 mi)
1098	**131**	Allyl alcohol	30 m	(100 ft)	0.2 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	1.2 km	(0.7 mi)
1135	**131**	Ethylene chlorohydrin	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.3 mi)	0.6 km	(0.4 mi)
1143 1143	**131P** **131P**	Crotonaldehyde Crotonaldehyde, stabilized	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.8 km	(0.5 mi)
1162	**155**	Dimethyldichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.5 km	(0.4 mi)	1.7 km	(1.1 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during	
					DAY	**NIGHT**			**DAY**	**NIGHT**
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)
1163	**131**	1,1-Dimethylhydrazine								
1163	**131**	Dimethylhydrazine, unsymmetrical	30 m	(100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)	100 m	(300 ft)	1.0 km (0.6 mi)	1.8 km (1.1 mi)
1182	**155**	Ethyl chloroformate	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m	(200 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)
1183	**139**	Ethyldichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m	(200 ft)	0.6 km (0.4 mi)	2.0 km (1.2 mi)
1185	**131P**	Ethyleneimine, stabilized	30 m	(100 ft)	0.2 km (0.1 mi)	0.4 km (0.3 mi)	150 m	(500 ft)	0.9 km (0.6 mi)	1.7 km (1.1 mi)
1196	**155**	Ethyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.2 km (0.1 mi)	0.7 km (0.4 mi)	150 m	(500 ft)	1.9 km (1.2 mi)	5.6 km (3.5 mi)
1238	**155**	Methyl chloroformate	30 m	(100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)	150 m	(500 ft)	1.1 km (0.7 mi)	2.1 km (1.3 mi)
1239	**131**	Methyl chloromethyl ether	60 m	(200 ft)	0.5 km (0.3 mi)	1.4 km (0.9 mi)	300 m	(1000 ft)	3.0 km (1.9 mi)	5.6 km (3.5 mi)
1242	**139**	Methyldichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m	(200 ft)	0.7 km (0.5 mi)	2.2 km (1.4 mi)
1244	**131**	Methylhydrazine	30 m	(100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m	(300 ft)	1.3 km (0.8 mi)	2.1 km (1.3 mi)
1250	**155**	Methyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m	(200 ft)	0.8 km (0.5 mi)	2.4 km (1.5 mi)
1251	**131P**	Methyl vinyl ketone, stabilized	100 m	(300 ft)	0.3 km (0.2 mi)	0.7 km (0.4 mi)	800 m	(2500 ft)	1.5 km (0.9 mi)	2.6 km (1.6 mi)
1259	**131**	Nickel carbonyl	100 m	(300 ft)	1.4 km (0.9 mi)	4.9 km (3.0 mi)	1000 m	(3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
1295	**139**	Trichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m	(200 ft)	0.6 km (0.4 mi)	2.0 km (1.3 mi)

1298	**155**	Trimethylchlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.4 km	(0.9 mi)
1305 1305	**155P** **155P**	Vinyltrichlorosilane **(when spilled in water)** Vinyltrichlorosilane, stabilized **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	1.8 km	(1.2 mi)
1340 1340	**139** **139**	Phosphorus pentasulfide, free from yellow and white Phosphorus **(when spilled in water)** Phosphorus pentasulphide, free from yellow and white Phosphorus **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.3 km	(0.8 mi)
1360	**139**	Calcium phosphide **(when spilled in water)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)	300 m	(1000 ft)	1.0 km	(0.7 mi)	3.7 km	(2.3 mi)
1380	**135**	Pentaborane	60 m	(200 ft)	0.5 km	(0.4 mi)	1.9 km	(1.2 mi)	150 m	(500 ft)	2.0 km	(1.3 mi)	4.7 km	(3.0 mi)
1384 1384 1384	**135** **135** **135**	Sodium dithionite **(when spilled in water)** Sodium hydrosulfite **(when spilled in water)** Sodium hydrosulphite **(when spilled in water)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.3 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	2.2 km	(1.4 mi)
1397	**139**	Aluminum phosphide **(when spilled in water)**	60 m	(200 ft)	0.2 km	(0.2 mi)	0.9 km	(0.6 mi)	500 m	(1500 ft)	2.0 km	(1.2 mi)	7.1 km	(4.4 mi)
1419	**139**	Magnesium aluminum phosphide **(when spilled in water)**	60 m	(200 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	500 m	(1500 ft)	1.8 km	(1.2 mi)	6.2 km	(3.9 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during	
					DAY	**NIGHT**			**DAY**	**NIGHT**
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)
1432	**139**	Sodium phosphide **(when spilled in water)**	30 m	(100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	300 m	(1000 ft)	1.3 km (0.8 mi)	4.0 km (2.5 mi)
1510	**143**	Tetranitromethane	30 m	(100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	30 m	(100 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)
1541	**155**	Acetone cyanohydrin, stabilized **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	100 m	(300 ft)	0.3 km (0.2 mi)	1.0 km (0.7 mi)
1556	**152**	MD **(when used as a weapon)**	300 m	(1000 ft)	1.6 km (1.0 mi)	4.3 km (2.7 mi)	1000 m	(3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
1556	**152**	Methyldichloroarsine	100 m	(300 ft)	1.3 km (0.8 mi)	2.0 km (1.3 mi)	300 m	(1000 ft)	3.2 km (2.0 mi)	4.2 km (2.6 mi)
1556	**152**	PD **(when used as a weapon)**	60 m	(200 ft)	0.4 km (0.3 mi)	0.4 km (0.3 mi)	300 m	(1000 ft)	1.6 km (1.0 mi)	1.6 km (1.0 mi)
1560 1560	**157** **157**	Arsenic chloride Arsenic trichloride	30 m	(100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	100 m	(300 ft)	1.0 km (0.6 mi)	1.4 km (0.9 mi)
1569	**131**	Bromoacetone	30 m	(100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	150 m	(500 ft)	1.8 km (1.1 mi)	3.4 km (2.1 mi)
1580	**154**	Chloropicrin	60 m	(200 ft)	0.5 km (0.3 mi)	1.2 km (0.8 mi)	200 m	(600 ft)	2.2 km (1.4 mi)	3.6 km (2.2 mi)
1581 1581	**123** **123**	Chloropicrin and Methyl bromide mixture Methyl bromide and Chloropicrin mixture	30 m	(100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m	(1000 ft)	2.1 km (1.3 mi)	5.9 km (3.7 mi)
1582 1582	**119** **119**	Chloropicrin and Methyl chloride mixture Methyl chloride and Chloropicrin mixture	30 m	(100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m	(200 ft)	0.4 km (0.2 mi)	1.7 km (1.1 mi)
1583	**154**	Chloropicrin mixture, n.o.s.	60 m	(200 ft)	0.5 km (0.3 mi)	1.2 km (0.8 mi)	200 m	(600 ft)	2.2 km (1.4 mi)	3.6 km (2.2 mi)

1589	**125**	CK **(when used as a weapon)**	800 m	(2500 ft)	5.3 km	(3.2 mi)	11.0+ km	(7.0+ mi)	1000 m	(3000 ft)	11.0+ km	(7.0+ mi)	11.0+ km	(7.0+ mi)
1589	**125**	Cyanogen chloride, stabilized	300 m	(1000 ft)	1.8 km	(1.1 mi)	6.2 km	(3.9 mi)	1000 m	(3000 ft)	9.4 km	(5.8 mi)	11.0+ km	(7.0+ mi)
1595 1595	**156** **156**	Dimethyl sulfate Dimethyl sulphate	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.6 km	(0.4 mi)
1605	**154**	Ethylene dibromide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)
1612 1612	**123** **123**	Compressed gas and hexaethyl tetraphosphate mixture Hexaethyl tetraphosphate and compressed gas mixture	100 m	(300 ft)	0.8 km	(0.5 mi)	2.7 km	(1.7 mi)	400 m	(1250 ft)	3.5 km	(2.2 mi)	8.1 km	(5.1 mi)
1613 1613	**154** **154**	Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	100 m	(300 ft)	0.5 km	(0.3 mi)	1.1 km	(0.7 mi)
1614	**152**	Hydrogen cyanide, stabilized (absorbed)	60 m	(200 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)	150 m	(500 ft)	0.5 km	(0.4 mi)	1.6 km	(1.0 mi)
1647 1647	**151** **151**	Ethylene dibromide and Methyl bromide mixture, liquid Methyl bromide and Ethylene dibromide mixture, liquid	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	150 m	(500 ft)	0.3 km	(0.2 mi)	0.7 km	(0.4 mi)
1660 1660	**124** **124**	Nitric oxide Nitric oxide, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.4 mi)	100 m	(300 ft)	0.5 km	(0.4 mi)	2.2 km	(1.4 mi)
1670	**157**	Perchloromethyl mercaptan	30 m	(100 ft)	0.2 km	(0.2 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	1.1 km	(0.7 mi)
1672	**151**	Phenylcarbylamine chloride	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.4 mi)
1680 1680	**157** **157**	Potassium cyanide **(when spilled in water)** Potassium cyanide, solid **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.3 km	(0.2 mi)	1.2 km	(0.8 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during	
					DAY	**NIGHT**			**DAY**	**NIGHT**
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)
1689	**157**	Sodium cyanide **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.4 km	(0.2 mi)	1.4 km	(0.9 mi)
1689	**157**	Sodium cyanide, solid **(when spilled in water)**												
1694	**159**	CA **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	100 m	(300 ft)	0.5 km	(0.4 mi)	2.6 km	(1.6 mi)
1695	**131**	Chloroacetone, stabilized	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	0.6 km	(0.4 mi)
1697	**153**	CN **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.2 km	(0.8 mi)
1698	**154**	Adamsite **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.4 km	(0.9 mi)
1698	**154**	DM **(when used as a weapon)**												
1699	**151**	DA **(when used as a weapon)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	300 m	(1000 ft)	1.9 km	(1.2 mi)	7.5 km	(4.7 mi)
1716	**156**	Acetyl bromide **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.2 mi)	0.9 km	(0.6 mi)
1717	**155**	Acetyl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.9 km	(0.6 mi)	2.5 km	(1.6 mi)
1722	**155**	Allyl chlorocarbonate	100 m	(300 ft)	0.3 km	(0.2 mi)	0.8 km	(0.5 mi)	400 m	(1250 ft)	1.4 km	(0.9 mi)	2.4 km	(1.5 mi)
1722	**155**	Allyl chloroformate												
1724	**155**	Allyltrichlorosilane, stabilized **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.5 km	(0.4 mi)	1.7 km	(1.1 mi)
1725	**137**	Aluminum bromide, anhydrous **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)

1726	**137**	Aluminum chloride, anhydrous **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	2.0 km	(1.2 mi)
1728	**155**	Amyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.7 km	(1.1 mi)
1732	**157**	Antimony pentafluoride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	100 m	(300 ft)	1.0 km	(0.7 mi)	3.8 km	(2.4 mi)
1741	**125**	Boron trichloride **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	1.3 km	(0.8 mi)
1741	**125**	Boron trichloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	100 m	(300 ft)	1.1 km	(0.7 mi)	3.5 km	(2.2 mi)
1744 1744 1744	**154** **154** **154**	Bromine Bromine, solution Bromine, solution (Inhalation Hazard Zone A)	60 m	(200 ft)	0.8 km	(0.5 mi)	2.3 km	(1.5 mi)	300 m	(1000 ft)	3.7 km	(2.3 mi)	7.5 km	(4.7 mi)
1744	**154**	Bromine, solution (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)
1745	**144**	Bromine pentafluoride **(when spilled on land)**	60 m	(200 ft)	0.8 km	(0.5 mi)	2.4 km	(1.5 mi)	400 m	(1250 ft)	4.9 km	(3.1 mi)	10.2 km	(6.4 mi)
1745	**144**	Bromine pentafluoride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.4 mi)	100 m	(300 ft)	1.1 km	(0.7 mi)	3.9 km	(2.5 mi)
1746	**144**	Bromine trifluoride **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)
1746	**144**	Bromine trifluoride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	100 m	(300 ft)	1.0 km	(0.6 mi)	3.7 km	(2.3 mi)
1747	**155**	Butyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.6 km	(1.0 mi)
1749	**124**	Chlorine trifluoride	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	300 m	(1000 ft)	1.4 km	(0.9 mi)	4.1 km	(2.6 mi)

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			First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during	
					DAY	**NIGHT**			**DAY**	**NIGHT**
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)
1752	**156**	Chloroacetyl chloride **(when spilled on land)**	30 m	(100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m	(300 ft)	1.1 km (0.7 mi)	1.9 km (1.2 mi)
1752	**156**	Chloroacetyl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)
1753	**156**	Chlorophenyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.3 km (0.2 mi)	0.9 km (0.6 mi)
1754	**137**	Chlorosulfonic acid (with or without sulfur trioxide mixture) **(when spilled on land)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)
1754	**137**	Chlorosulfonic acid (with or without sulfur trioxide mixture) **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m	(200 ft)	0.7 km (0.4 mi)	2.2 km (1.4 mi)
1754	**137**	Chlorosulphonic acid (with or without sulphur trioxide mixture) **(when spilled on land)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)
1754	**137**	Chlorosulphonic acid (with or without sulphur trioxide mixture) **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m	(200 ft)	0.7 km (0.4 mi)	2.2 km (1.4 mi)
1758	**137**	Chromium oxychloride **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.2 km (0.1 mi)	0.7 km (0.5 mi)

1762	**156**	Cyclohexenyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	1.2 km	(0.8 mi)
1763	**156**	Cyclohexyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	1.3 km	(0.8 mi)
1765	**156**	Dichloroacetyl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.9 km	(0.6 mi)
1766	**156**	Dichlorophenyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	1.9 km	(1.2 mi)
1767	**155**	Diethyldichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.2 mi)	1.0 km	(0.6 mi)
1769	**156**	Diphenyldichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.2 mi)	1.2 km	(0.8 mi)
1771	**156**	Dodecyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.3 km	(0.8 mi)
1777	**137**	Fluorosulfonic acid **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.2 mi)	0.7 km	(0.5 mi)
1777	**137**	Fluorosulphonic acid **(when spilled in water)**												
1781	**156**	Hexadecyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)
1784	**156**	Hexyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	1.4 km	(0.9 mi)
1799	**156**	Nonyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.4 km	(0.9 mi)
1800	**156**	Octadecyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	1.4 km	(0.9 mi)

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					DAY	**NIGHT**			**DAY**	**NIGHT**
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)
1801	**156**	Octyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m	(200 ft)	0.5 km (0.3 mi)	1.5 km (0.9 mi)
1804	**156**	Phenyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m	(100 ft)	0.4 km (0.3 mi)	1.4 km (0.9 mi)
1806	**137**	Phosphorus pentachloride **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	30 m	(100 ft)	0.4 km (0.3 mi)	1.4 km (0.9 mi)
1808	**137**	Phosphorus tribromide **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	30 m	(100 ft)	0.4 km (0.3 mi)	1.3 km (0.9 mi)
1809	**137**	Phosphorus trichloride **(when spilled on land)**	30 m	(100 ft)	0.2 km (0.1 mi)	0.5 km (0.4 mi)	100 m	(300 ft)	1.1 km (0.7 mi)	2.2 km (1.4 mi)
1809	**137**	Phosphorus trichloride **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m	(200 ft)	0.7 km (0.5 mi)	2.3 km (1.4 mi)
1810	**137**	Phosphorus oxychloride **(when spilled on land)**	30 m	(100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m	(300 ft)	1.0 km (0.6 mi)	1.8 km (1.1 mi)
1810	**137**	Phosphorus oxychloride **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m	(200 ft)	0.6 km (0.4 mi)	2.0 km (1.3 mi)
1815	**132**	Propionyl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.3 km (0.2 mi)	0.7 km (0.4 mi)
1816	**155**	Propyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m	(200 ft)	0.6 km (0.4 mi)	1.8 km (1.1 mi)
1818	**157**	Silicon tetrachloride **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m	(200 ft)	0.8 km (0.5 mi)	2.5 km (1.6 mi)

1828	**137**	Sulfur chlorides **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.4 km	(0.3 mi)
1828	**137**	Sulfur chlorides **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)
1828	**137**	Sulphur chlorides **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.4 km	(0.3 mi)
1828	**137**	Sulphur chlorides **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)
1829 1829	**137** **137**	Sulfur trioxide, stabilized Sulphur trioxide, stabilized	60 m	(200 ft)	0.4 km	(0.2 mi)	1.0 km	(0.6 mi)	300 m	(1000 ft)	2.9 km	(1.8 mi)	5.7 km	(3.6 mi)
1831 1831 1831 1831	**137** **137** **137** **137**	Sulfuric acid, fuming Sulfuric acid, fuming, with not less than 30% free Sulfur trioxide Sulphuric acid, fuming Sulphuric acid, fuming, with not less than 30% free Sulphur trioxide	60 m	(200 ft)	0.4 km	(0.2 mi)	1.0 km	(0.6 mi)	300 m	(1000 ft)	2.9 km	(1.8 mi)	5.7 km	(3.6 mi)
1834	**137**	Sulfuryl chloride **(when spilled on land)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m	(200 ft)	0.8 km	(0.5 mi)	1.5 km	(1.0 mi)
1834	**137**	Sulfuryl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.6 km	(1.0 mi)
1834	**137**	Sulphuryl chloride **(when spilled on land)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m	(200 ft)	0.8 km	(0.5 mi)	1.5 km	(1.0 mi)
1834	**137**	Sulphuryl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.6 km	(1.0 mi)
1836	**137**	Thionyl chloride **(when spilled on land)**	30 m	(100 ft)	0.2 km	(0.2 mi)	0.6 km	(0.4 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	1.5 km	(0.9 mi)

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			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)
1836	**137**	Thionyl chloride **(when spilled in water)**	100 m (300 ft)	0.9 km	(0.6 mi)	2.4 km (1.5 mi)	600 m (2000 ft)	7.9 km	(4.9 mi)	11.0+ km (7.0+ mi)
1838	**137**	Titanium tetrachloride **(when spilled on land)**	30 m (100 ft)	0.1 km	(0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)
1838	**137**	Titanium tetrachloride **(when spilled in water)**	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km	(0.3 mi)	1.6 km (1.0 mi)
1859 1859	**125** **125**	Silicon tetrafluoride Silicon tetrafluoride, compressed	30 m (100 ft)	0.2 km	(0.1 mi)	0.7 km (0.5 mi)	100 m (300 ft)	0.5 km	(0.3 mi)	1.8 km (1.1 mi)
1892	**151**	ED **(when used as a weapon)**	150 m (500 ft)	2.0 km	(1.2 mi)	2.9 km (1.8 mi)	1000 m (3000 ft)	10.4 km	(6.5 mi)	11.0+ km (7.0+ mi)
1892	**151**	Ethyldichloroarsine	150 m (500 ft)	1.4 km	(0.9 mi)	2.1 km (1.3 mi)	400 m (1250 ft)	4.6 km	(2.9 mi)	6.3 km (3.9 mi)
1898	**156**	Acetyl iodide **(when spilled in water)**	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.2 mi)	30 m (100 ft)	0.4 km	(0.3 mi)	1.0 km (0.7 mi)
1911 1911 1911	**119** **119** **119**	Diborane Diborane, compressed Diborane mixtures	60 m (200 ft)	0.3 km	(0.2 mi)	1.0 km (0.6 mi)	200 m (600 ft)	1.3 km	(0.8 mi)	4.0 km (2.5 mi)
1923 1923 1923	**135** **135** **135**	Calcium dithionite **(when spilled in water)** Calcium hydrosulfite **(when spilled in water)** Calcium hydrosulphite **(when spilled in water)**	30 m (100 ft)	0.2 km	(0.1 mi)	0.5 km (0.4 mi)	60 m (200 ft)	0.6 km	(0.4 mi)	2.2 km (1.4 mi)

1929	**135**	Potassium dithionite **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	2.0 km	(1.2 mi)
1929	**135**	Potassium hydrosulfite **(when spilled in water)**												
1929	**135**	Potassium hydrosulphite **(when spilled in water)**												
1931	**171**	Zinc dithionite **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	(60 m)	(200 ft)	0.6 km	(0.4 mi)	2.0 km	(1.3 mi)
1931	**171**	Zinc hydrosulfite **(when spilled in water)**												
1931	**171**	Zinc hydrosulphite **(when spilled in water)**												
1953	**119**	Compressed gas, poisonous, flammable, n.o.s.	150 m	(500 ft)	1.0 km	(0.6 mi)	3.8 km	(2.4 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	10.2 km	(6.3 mi)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)												
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m	(600 ft)	1.2 km	(0.8 mi)	2.6 km	(1.6 mi)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
1953	**119**	Compressed gas, toxic, flammable, n.o.s.	150 m	(500 ft)	1.0 km	(0.6 mi)	3.8 km	(2.4 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	10.2 km	(6.3 mi)
1953	**119**	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)												

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions	Then PROTECT persons Downwind during			First ISOLATE in all Directions	Then PROTECT persons Downwind during		
ID No.	Guide	NAME OF MATERIAL	Meters (Feet)	DAY Kilometers (Miles)		NIGHT Kilometers (Miles)		Meters (Feet)	DAY Kilometers (Miles)		NIGHT Kilometers (Miles)	
1953	**119**	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m (600 ft)	1.2 km	(0.8 mi)	2.6 km	(1.6 mi)
1953	**119**	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m (500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
1953	**119**	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m (300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
1955	**123**	Compressed gas, poisonous, n.o.s.										
1955	**123**	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km	(0.3 mi)	2.5 km	(1.6 mi)	1000 m (3000 ft)	5.6 km	(3.5 mi)	10.2 km	(6.3 mi)
1955	**123**	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	300 m (1000 ft)	1.4 km	(0.9 mi)	4.1 km	(2.6 mi)
1955	**123**	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m (500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
1955	**123**	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m (300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)

1955	**123**	Compressed gas, toxic, n.o.s.												
1955	**123**	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.5 km	(0.3 mi)	2.5 km	(1.6 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	10.2 km	(6.3 mi)
1955	**123**	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	300 m	(1000 ft)	1.4 km	(0.9 mi)	4.1 km	(2.6 mi)
1955	**123**	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
1955	**123**	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
1955	**123**	Organic phosphate compound mixed with compressed gas												
1955	**123**	Organic phosphate mixed with compressed gas	100 m	(300 ft)	1.0 km	(0.7 mi)	3.4 km	(2.1 mi)	500 m	(1500 ft)	4.4 km	(2.7 mi)	9.6 km	(6.0 mi)
1955	**123**	Organic phosphorus compound mixed with compressed gas												
1967	**123**	Insecticide gas, poisonous, n.o.s.												
1967	**123**	Insecticide gas, toxic, n.o.s.	100 m	(300 ft)	1.0 km	(0.7 mi)	3.4 km	(2.1 mi)	500 m	(1500 ft)	4.4 km	(2.7 mi)	9.6 km	(6.0 mi)
1967	**123**	Parathion and compressed gas mixture												
1975	**124**	Dinitrogen tetroxide and Nitric oxide mixture												
1975	**124**	Nitric oxide and Dinitrogen tetroxide mixture												
1975	**124**	Nitric oxide and Nitrogen dioxide mixture												
1975	**124**	Nitric oxide and Nitrogen tetroxide mixture	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.4 mi)	100 m	(300 ft)	0.5 km	(0.4 mi)	2.2 km	(1.4 mi)
1975	**124**	Nitrogen dioxide and Nitric oxide mixture												
1975	**124**	Nitrogen tetroxide and Nitric oxide mixture												

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during	
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)
1994	**131**	Iron pentacarbonyl	100 m (300 ft)	0.9 km (0.6 mi)	2.0 km (1.2 mi)	400 m (1250 ft)	4.5 km (2.8 mi)	7.4 km (4.6 mi)
2004	**135**	Magnesium diamide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.1 km (1.4 mi)
2011	**139**	Magnesium phosphide **(when spilled in water)**	60 m (200 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	400 m (1250 ft)	1.7 km (1.1 mi)	5.7 km (3.6 mi)
2012	**139**	Potassium phosphide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	1.2 km (0.7 mi)	3.8 km (2.4 mi)
2013	**139**	Strontium phosphide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.4 mi)	300 m (1000 ft)	1.1 km (0.7 mi)	3.7 km (2.3 mi)
2032	**157**	Nitric acid, red fuming	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	150 m (500 ft)	0.2 km (0.2 mi)	0.4 km (0.3 mi)
2186	**125**	Hydrogen chloride, refrigerated liquid	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	**Refer to table 3**		
2188	**119**	Arsine	150 m (500 ft)	1.0 km (0.6 mi)	3.8 km (2.4 mi)	1000 m (3000 ft)	5.6 km (3.5 mi)	10.2 km (6.3 mi)
2188	**119**	SA **(when used as a weapon)**	300 m (1000 ft)	1.9 km (1.2 mi)	5.7 km (3.6 mi)	1000 m (3000 ft)	8.9 km (5.6 mi)	11.0+ km (7.0+ mi)
2189	**119**	Dichlorosilane	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	200 m (600 ft)	1.2 km (0.8 mi)	2.6 km (1.6 mi)
2190 2190	**124** **124**	Oxygen difluoride Oxygen difluoride, compressed	300 m (1000 ft)	1.6 km (1.0 mi)	6.7 km (4.2 mi)	1000 m (3000 ft)	9.8 km (6.1 mi)	11.0+ km (7.0+ mi)
2191 2191	**123** **123**	Sulfuryl fluoride Sulphuryl fluoride	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	4.4 km (2.7 mi)
2192	**119**	Germane	150 m (500 ft)	0.7 km (0.5 mi)	3.0 km (1.9 mi)	500 m (1500 ft)	2.9 km (1.8 mi)	6.7 km (4.2 mi)

2194	**125**	Selenium hexafluoride	200 m	(600 ft)	1.1 km	(0.7 mi)	3.4 km	(2.1 mi)	600 m	(2000 ft)	3.4 km	(2.1 mi)	7.8 km	(4.9 mi)
2195	**125**	Tellurium hexafluoride	600 m	(2000 ft)	3.6 km	(2.2 mi)	8.6 km	(5.4 mi)	1000 m	(3000 ft)	11.0+ km	(7.0+ mi)	11.0+ km	(7.0+ mi)
2196	**125**	Tungsten hexafluoride	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.5 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.8 km	(1.8 mi)
2197	**125**	Hydrogen iodide, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
2198 2198	**125** **125**	Phosphorus pentafluoride Phosphorus pentafluoride, compressed	30 m	(100 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	150 m	(500 ft)	0.8 km	(0.5 mi)	2.9 km	(1.8 mi)
2199	**119**	Phosphine	60 m	(200 ft)	0.2 km	(0.2 mi)	1.0 km	(0.6 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	3.8 km	(2.4 mi)
2202	**117**	Hydrogen selenide, anhydrous	300 m	(1000 ft)	1.7 km	(1.1 mi)	5.9 km	(3.7 mi)	1000 m	(3000 ft)	11.0+ km	(7.0+ mi)	11.0+ km	(7.0+ mi)
2204 2204	**119** **119**	Carbonyl sulfide Carbonyl sulphide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	3.2 km	(2.0 mi)
2232 2232	**153** **153**	Chloroacetaldehyde 2-Chloroethanal	30 m	(100 ft)	0.2 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	1.1 km	(0.7 mi)
2285	**156**	Isocyanatobenzotrifluorides	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	0.6 km	(0.4 mi)
2308 2308 2308 2308	**157** **157** **157** **157**	Nitrosylsulfuric acid, liquid **(when spilled in water)** Nitrosylsulfuric acid, solid **(when spilled in water)** Nitrosylsulphuric acid, liquid **(when spilled in water)** Nitrosylsulphuric acid, solid **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	300 m	(1000 ft)	1.0 km	(0.6 mi)	2.8 km	(1.8 mi)
2334	**131**	Allylamine	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.3 mi)	150 m	(500 ft)	1.4 km	(0.9 mi)	2.5 km	(1.6 mi)
2337	**131**	Phenyl mercaptan	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.4 km	(0.2 mi)
2353	**132**	Butyryl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.9 km	(0.6 mi)

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			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during	
					DAY	**NIGHT**			**DAY**	**NIGHT**
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)
2382	**131**	Dimethylhydrazine, symmetrical	30 m	(100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m	(200 ft)	0.7 km (0.5 mi)	1.3 km (0.8 mi)
2395	**132**	Isobutyryl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)
2407	**155**	Isopropyl chloroformate	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m	(200 ft)	0.5 km (0.3 mi)	0.9 km (0.5 mi)
2417 2417	**125** **125**	Carbonyl fluoride Carbonyl fluoride, compressed	100 m	(300 ft)	0.6 km (0.4 mi)	2.2 km (1.4 mi)	600 m	(2000 ft)	3.6 km (2.2 mi)	8.1 km (5.1 mi)
2418 2418	**125** **125**	Sulfur tetrafluoride Sulphur tetrafluoride	100 m	(300 ft)	0.5 km (0.3 mi)	2.4 km (1.5 mi)	400 m	(1250 ft)	2.1 km (1.3 mi)	6.0 km (3.8 mi)
2420	**125**	Hexafluoroacetone	100 m	(300 ft)	0.6 km (0.4 mi)	2.6 km (1.6 mi)	1000 m	(3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
2421	**124**	Nitrogen trioxide	60 m	(200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	150 m	(500 ft)	0.9 km (0.6 mi)	3.0 km (1.9 mi)
2434	**156**	Dibenzyldichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)
2435	**156**	Ethylphenyldichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)
2437	**156**	Methylphenyldichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m	(100 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)
2438	**132**	Trimethylacetyl chloride	60 m	(200 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)	150 m	(500 ft)	2.0 km (1.3 mi)	3.2 km (2.0 mi)
2442	**156**	Trichloroacetyl chloride	30 m	(100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m	(200 ft)	0.6 km (0.4 mi)	1.0 km (0.7 mi)
2474	**157**	Thiophosgene	60 m	(200 ft)	0.6 km (0.4 mi)	1.7 km (1.1 mi)	200 m	(600 ft)	2.2 km (1.4 mi)	4.1 km (2.5 mi)

2477	**131**	Methyl isothiocyanate	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.2 mi)	0.3 km	(0.2 mi)
2478 2478 2478 2478	**155** **155** **155** **155**	Isocyanate solution, flammable, poisonous, n.o.s. Isocyanate solution, flammable, toxic, n.o.s. Isocyanates, flammable, poisonous, n.o.s. Isocyanates, flammable, toxic, n.o.s.	60 m	(200 ft)	0.8 km	(0.5 mi)	1.8 km	(1.1 mi)	400 m	(1250 ft)	4.3 km	(2.7 mi)	7.0 km	(4.3 mi)
2480	**155**	Methyl isocyanate	150 m	(500 ft)	1.5 km	(1.0 mi)	4.4 km	(2.8 mi)	1000 m	(3000 ft)	11.0+ km	(7.0+ mi)	11.0+ km	(7.0+ mi)
2481	**155**	Ethyl isocyanate	150 m	(500 ft)	2.0 km	(1.2 mi)	5.1 km	(3.2 mi)	1000 m	(3000 ft)	11.0+ km	(7.0+ mi)	11.0+ km	(7.0+ mi)
2482	**155**	n-Propyl isocyanate	100 m	(300 ft)	1.3 km	(0.8 mi)	2.7 km	(1.7 mi)	600 m	(2000 ft)	7.1 km	(4.4 mi)	10.8 km	(6.7 mi)
2483	**155**	Isopropyl isocyanate	100 m	(300 ft)	1.4 km	(0.9 mi)	3.0 km	(1.9 mi)	800 m	(2500 ft)	8.4 km	(5.2 mi)	11.0+ km	(7.0+ mi)
2484	**155**	tert-Butyl isocyanate	60 m	(200 ft)	0.8 km	(0.5 mi)	1.8 km	(1.1 mi)	400 m	(1250 ft)	4.3 km	(2.7 mi)	7.0 km	(4.3 mi)
2485	**155**	n-Butyl isocyanate	60 m	(200 ft)	0.6 km	(0.4 mi)	1.2 km	(0.7 mi)	200 m	(600 ft)	2.6 km	(1.6 mi)	4.0 km	(2.5 mi)
2486	**155**	Isobutyl isocyanate	60 m	(200 ft)	0.6 km	(0.4 mi)	1.1 km	(0.7 mi)	200 m	(600 ft)	2.5 km	(1.6 mi)	4.0 km	(2.5 mi)
2487	**155**	Phenyl isocyanate	60 m	(200 ft)	0.8 km	(0.5 mi)	1.3 km	(0.8 mi)	300 m	(1000 ft)	3.1 km	(1.9 mi)	4.6 km	(2.9 mi)
2488	**155**	Cyclohexyl isocyanate	30 m	(100 ft)	0.3 km	(0.2 mi)	0.4 km	(0.2 mi)	100 m	(300 ft)	0.9 km	(0.6 mi)	1.3 km	(0.8 mi)
2495	**144**	Iodine pentafluoride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.4 mi)	100 m	(300 ft)	1.1 km	(0.7 mi)	4.1 km	(2.6 mi)
2521	**131P**	Diketene, stabilized	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.4 km	(0.3 mi)
2534	**119**	Methylchlorosilane	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	1.4 km	(0.9 mi)
2548	**124**	Chlorine pentafluoride	100 m	(300 ft)	0.5 km	(0.3 mi)	2.5 km	(1.6 mi)	800 m	(2500 ft)	5.2 km	(3.3 mi)	11.0+ km	(7.0+ mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during	
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)
2600	**119**	Carbon monoxide and Hydrogen mixture, compressed	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.2 km (0.7 mi)	4.4 km (2.8 mi)
2600	**119**	Hydrogen and Carbon monoxide mixture, compressed						
2605	**155**	Methoxymethyl isocyanate	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)	100 m (300 ft)	1.0 km (0.7 mi)	1.5 km (1.0 mi)
2606	**155**	Methyl orthosilicate	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	0.9 km (0.6 mi)
2644	**151**	Methyl iodide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)
2646	**151**	Hexachlorocyclopentadiene	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.2 mi)
2668	**131**	Chloroacetonitrile	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.2 mi)
2676	**119**	Stibine	60 m (200 ft)	0.3 km (0.2 mi)	1.6 km (1.0 mi)	200 m (600 ft)	1.2 km (0.8 mi)	4.2 km (2.6 mi)
2691	**137**	Phosphorus pentabromide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.4 mi)
2692	**157**	Boron tribromide **(when spilled on land)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.4 km (0.3 mi)
2692	**157**	Boron tribromide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.7 km (1.1 mi)
2740	**155**	n-Propyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.5 km (0.4 mi)	1.0 km (0.6 mi)
2742	**155**	sec-Butyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	0.5 km (0.3 mi)

2742 2742	**155** **155**	Chloroformates, poisonous, corrosive, flammable, n.o.s. Chloroformates, toxic, corrosive, flammable, n.o.s.	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.2 mi)	0.5 km	(0.4 mi)
2742	**155**	Isobutyl chloroformate	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.4 km	(0.3 mi)
2743	**155**	n-Butyl chloroformate	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.4 km	(0.3 mi)
2806	**138**	Lithium nitride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	1.9 km	(1.2 mi)
2810 2810	**153** **153**	Buzz **(when used as a weapon)** BZ **(when used as a weapon)**	60 m	(200 ft)	0.4 km	(0.2 mi)	1.7 km	(1.1 mi)	400 m	(1250 ft)	2.2 km	(1.4 mi)	8.1 km	(5.0 mi)
2810	**153**	CS **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	100 m	(300 ft)	0.4 km	(0.3 mi)	1.9 km	(1.2 mi)
2810	**153**	DC **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	60 m	(200 ft)	0.4 km	(0.3 mi)	1.8 km	(1.1 mi)
2810	**153**	GA **(when used as a weapon)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.5 km	(0.4 mi)	0.6 km	(0.4 mi)
2810	**153**	GB **(when used as a weapon)**	60 m	(200 ft)	0.4 km	(0.3 mi)	1.1 km	(0.7 mi)	400 m	(1250 ft)	2.1 km	(1.3 mi)	4.9 km	(3.0 mi)
2810	**153**	GD **(when used as a weapon)**	60 m	(200 ft)	0.4 km	(0.3 mi)	0.7 km	(0.5 mi)	300 m	(1000 ft)	1.8 km	(1.1 mi)	2.7 km	(1.7 mi)
2810	**153**	GF **(when used as a weapon)**	30 m	(100 ft)	0.2 km	(0.2 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.8 km	(0.5 mi)	1.0 km	(0.6 mi)
2810 2810	**153** **153**	H **(when used as a weapon)** HD **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.4 km	(0.3 mi)
2810	**153**	HL **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.5 km	(0.3 mi)	1.0 km	(0.6 mi)
2810	**153**	HN-1 **(when used as a weapon)**	60 m	(200 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)	200 m	(600 ft)	1.1 km	(0.7 mi)	1.8 km	(1.1 mi)
2810	**153**	HN-2 **(when used as a weapon)**	60 m	(200 ft)	0.3 km	(0.2 mi)	0.6 km	(0.4 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	2.1 km	(1.3 mi)
2810	**153**	HN-3 **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.3 km	(0.2 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during	
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)		**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)	Meters (Feet)		**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)
2810 2810	**153** **153**	L (Lewisite) **(when used as a weapon)** Lewisite **(when used as a weapon)**	30 m (100 ft)		0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)		0.5 km (0.3 mi)	1.0 km (0.6 mi)
2810	**153**	Mustard **(when used as a weapon)**	30 m (100 ft)		0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)		0.3 km (0.2 mi)	0.4 km (0.3 mi)
2810	**153**	Mustard Lewisite **(when used as a weapon)**	30 m (100 ft)		0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)		0.5 km (0.3 mi)	1.0 km (0.6 mi)
2810	**153**	Sarin **(when used as a weapon)**	60 m (200 ft)		0.4 km (0.3 mi)	1.1 km (0.7 mi)	400 m (1250 ft)		2.1 km (1.3 mi)	4.9 km (3.0 mi)
2810	**153**	Soman **(when used as a weapon)**	60 m (200 ft)		0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)		1.8 km (1.1 mi)	2.7 km (1.7 mi)
2810	**153**	Tabun **(when used as a weapon)**	30 m (100 ft)		0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)		0.5 km (0.4 mi)	0.6 km (0.4 mi)
2810	**153**	Thickened GD **(when used as a weapon)**	60 m (200 ft)		0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)		1.8 km (1.1 mi)	2.7 km (1.7 mi)
2810	**153**	VX **(when used as a weapon)**	30 m (100 ft)		0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)		0.4 km (0.2 mi)	0.3 km (0.2 mi)
2811	**154**	CX **(when used as a weapon)**	60 m (200 ft)		0.2 km (0.2 mi)	1.1 km (0.7 mi)	200 m (600 ft)		1.2 km (0.7 mi)	5.1 km (3.2 mi)
2826	**155**	Ethyl chlorothioformate	30 m (100 ft)		0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)		0.4 km (0.2 mi)	0.5 km (0.4 mi)
2845	**135**	Ethyl phosphonous dichloride, anhydrous	30 m (100 ft)		0.3 km (0.2 mi)	0.7 km (0.5 mi)	100 m (300 ft)		1.3 km (0.8 mi)	2.3 km (1.4 mi)

2845	**135**	Methyl phosphonous dichloride	30 m	(100 ft)	0.4 km	(0.2 mi)	1.0 km	(0.7 mi)	150 m	(500 ft)	1.9 km	(1.2 mi)	3.5 km	(2.2 mi)
2901	**124**	Bromine chloride	100 m	(300 ft)	0.5 km	(0.3 mi)	1.8 km	(1.1 mi)	800 m	(2500 ft)	4.5 km	(2.8 mi)	10.0 km	(6.2 mi)
2927	**154**	Ethyl phosphonothioic dichloride, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)
2927	**154**	Ethyl phosphorodichloridate	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.3 km	(0.2 mi)
2977	**166**	Radioactive material, Uranium hexafluoride, fissile **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	2.1 km	(1.4 mi)
2977	**166**	Uranium hexafluoride, radioactive material, fissile **(when spilled in water)**												
2978	**166**	Radioactive material, Uranium hexafluoride, non fissile or fissile-excepted **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	2.1 km	(1.4 mi)
2978	**166**	Uranium hexafluoride, radioactive material, non fissile or fissile-excepted **(when spilled in water)**												
2985	**155**	Chlorosilanes, flammable, corrosive, n.o.s. **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.6 km	(1.0 mi)
2986	**155**	Chlorosilanes, corrosive, flammable, n.o.s. **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.6 km	(1.0 mi)
2987	**156**	Chlorosilanes, corrosive, n.o.s. **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.6 km	(1.0 mi)
2988	**139**	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s. **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.6 km	(1.0 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions		Then **PROTECT** persons Downwind during	
					DAY	**NIGHT**			**DAY**	**NIGHT**
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)		Kilometers (Miles)	Kilometers (Miles)
3023	**131**	2-Methyl-2-heptanethiol	30 m (100 ft)		0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)		0.5 km (0.3 mi)	0.7 km (0.4 mi)
3048	**157**	Aluminum phosphide pesticide **(when spilled in water)**	60 m (200 ft)		0.2 km (0.2 mi)	0.9 km (0.6 mi)	500 m (1500 ft)		2.0 km (1.2 mi)	7.0 km (4.4 mi)
3049 3049	**138** **138**	Metal alkyl halides, water-reactive, n.o.s. **(when spilled in water)** Metal aryl halides, water-reactive, n.o.s. **(when spilled in water)**	30 m (100 ft)		0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)		0.4 km (0.3 mi)	1.3 km (0.8 mi)
3052 3052	**135** **135**	Aluminum alkyl halides, liquid **(when spilled in water)** Aluminum alkyl halides, solid **(when spilled in water)**	30 m (100 ft)		0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)		0.4 km (0.3 mi)	1.3 km (0.8 mi)
3057	**125**	Trifluoroacetyl chloride	30 m (100 ft)		0.2 km (0.1 mi)	0.9 km (0.6 mi)	600 m (2000 ft)		4.0 km (2.5 mi)	9.5 km (5.9 mi)
3079	**131P**	Methacrylonitrile, stabilized	30 m (100 ft)		0.3 km (0.2 mi)	0.7 km (0.4 mi)	150 m (500 ft)		1.4 km (0.9 mi)	2.5 km (1.6 mi)
3083	**124**	Perchloryl fluoride	30 m (100 ft)		0.2 km (0.2 mi)	1.1 km (0.7 mi)	800 m (2500 ft)		4.5 km (2.8 mi)	9.6 km (6.0 mi)
3160 3160	**119** **119**	Liquefied gas, poisonous, flammable, n.o.s. Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	150 m (500 ft)		1.0 km (0.6 mi)	3.8 km (2.4 mi)	1000 m (3000 ft)		5.6 km (3.5 mi)	10.2 km (6.3 mi)

3160	**119**	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m	(600 ft)	1.2 km	(0.8 mi)	2.6 km	(1.6 mi)
3160	**119**	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3160	**119**	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3160 3160	**119** **119**	Liquefied gas, toxic, flammable, n.o.s. Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	150 m	(500 ft)	1.0 km	(0.6 mi)	3.8 km	(2.4 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	10.2 km	(6.3 mi)
3160	**119**	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m	(600 ft)	1.2 km	(0.8 mi)	2.6 km	(1.6 mi)
3160	**119**	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3160	**119**	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3162 3162	**123** **123**	Liquefied gas, poisonous, n.o.s. Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.5 km	(0.3 mi)	2.5 km	(1.6 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	10.2 km	(6.3 mi)
3162	**123**	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	300 m	(1000 ft)	1.4 km	(0.9 mi)	4.1 km	(2.6 mi)
3162	**123**	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)

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			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)
3162	**123**	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.7 km	(0.5 mi)	1.9 km (1.2 mi)
3162 3162	**123** **123**	Liquefied gas, toxic, n.o.s. Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km	(0.3 mi)	2.5 km (1.6 mi)	1000 m (3000 ft)	5.6 km	(3.5 mi)	10.2 km (6.3 mi)
3162	**123**	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km	(0.1 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.4 km	(0.9 mi)	4.1 km (2.6 mi)
3162	**123**	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km	(0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km	(0.6 mi)	2.4 km (1.5 mi)
3162	**123**	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.7 km	(0.5 mi)	1.9 km (1.2 mi)
3246 3246	**156** **156**	Methanesulfonyl chloride Methanesulphonyl chloride	30 m (100 ft)	0.2 km	(0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km	(0.4 mi)	0.8 km (0.5 mi)
3275 3275	**131** **131**	Nitriles, poisonous, flammable, n.o.s. Nitriles, toxic, flammable, n.o.s.	30 m (100 ft)	0.3 km	(0.2 mi)	0.7 km (0.4 mi)	150 m (500 ft)	1.4 km	(0.9 mi)	2.5 km (1.6 mi)
3276 3276 3276 3276 3276 3276	**151** **151** **151** **151** **151** **151**	Nitriles, liquid, poisonous, n.o.s. Nitriles, liquid, toxic, n.o.s. Nitriles, poisonous, liquid, n.o.s. Nitriles, poisonous, n.o.s. Nitriles, toxic, liquid, n.o.s. Nitriles, toxic, n.o.s.	30 m (100 ft)	0.3 km	(0.2 mi)	0.7 km (0.4 mi)	150 m (500 ft)	1.4 km	(0.9 mi)	2.5 km (1.6 mi)

3278	**151**	Organophosphorus compound, liquid, poisonous, n.o.s. 3278 **151** Organophosphorus compound, liquid, toxic, n.o.s. 3278 **151** Organophosphorus compound, poisonous, liquid, n.o.s. 3278 **151** Organophosphorus compound, poisonous, n.o.s. 3278 **151** Organophosphorus compound, toxic, liquid, n.o.s. 3278 **151** Organophosphorus compound, toxic, n.o.s.	30 m	(100 ft)	0.4 km	(0.2 mi)	1.0 km	(0.7 mi)	150 m	(500 ft)	1.9 km	(1.2 mi)	3.5 km	(2.2 mi)
3279	**131**	Organophosphorus compound, poisonous, flammable, n.o.s. 3279 **131** Organophosphorus compound, toxic, flammable, n.o.s.	30 m	(100 ft)	0.4 km	(0.2 mi)	1.0 km	(0.7 mi)	150 m	(500 ft)	1.9 km	(1.2 mi)	3.5 km	(2.2 mi)
3280	**151**	Organoarsenic compound, liquid, n.o.s. 3280 **151** Organoarsenic compound, n.o.s.	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.5 mi)	150 m	(500 ft)	1.5 km	(1.0 mi)	3.5 km	(2.2 mi)
3281	**151**	Metal carbonyls, liquid, n.o.s. 3281 **151** Metal carbonyls, n.o.s.	100 m	(300 ft)	1.4 km	(0.9 mi)	4.9 km	(3.0 mi)	1000 m	(3000 ft)	11.0+ km	(7.0+ mi)	11.0+ km	(7.0+ mi)
3294	**131**	Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.5 km	(0.3 mi)	1.9 km	(1.2 mi)
3300	**119P**	Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide 3300 **119P** Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during	
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s.						
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	800 m (2500 ft)	5.2 km (3.3 mi)	11.0+ km (7.0+ mi)
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	800 m (2500 ft)	4.5 km (2.8 mi)	9.6 km (6.0 mi)
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.4 km (1.5 mi)
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.7 km (0.5 mi)	1.9 km (1.2 mi)
3303	**124**	Compressed gas, toxic, oxidizing, n.o.s.						
3303	**124**	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	800 m (2500 ft)	5.2 km (3.3 mi)	11.0+ km (7.0+ mi)
3303	**124**	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	800 m (2500 ft)	4.5 km (2.8 mi)	9.6 km (6.0 mi)

3303	**124**	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3303	**124**	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3304 3304	**123** **123**	Compressed gas, poisonous, corrosive, n.o.s. Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.6 km	(0.4 mi)	2.5 km	(1.5 mi)	500 m	(1500 ft)	3.0 km	(1.9 mi)	9.0 km	(5.6 mi)
3304	**123**	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.2 mi)	1.0 km	(0.6 mi)	400 m	(1250 ft)	2.2 km	(1.4 mi)	4.8 km	(3.0 mi)
3304	**123**	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.6 km	(1.6 mi)
3304	**123**	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	150 m	(500 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3304 3304	**123** **123**	Compressed gas, toxic, corrosive, n.o.s. Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.6 km	(0.4 mi)	2.5 km	(1.5 mi)	500 m	(1500 ft)	3.0 km	(1.9 mi)	9.0 km	(5.6 mi)
3304	**123**	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.2 mi)	1.0 km	(0.6 mi)	400 m	(1250 ft)	2.2 km	(1.4 mi)	4.8 km	(3.0 mi)
3304	**123**	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.6 km	(1.6 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)
3304	**123**	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.7 km	(0.5 mi)	1.9 km (1.2 mi)
3305 3305	**119** **119**	Compressed gas, poisonous, flammable, corrosive, n.o.s. Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	150 m (500 ft)	1.0 km	(0.6 mi)	3.8 km (2.4 mi)	1000 m (3000 ft)	5.6 km	(3.5 mi)	10.2 km (6.3 mi)
3305	**119**	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km	(0.1 mi)	0.4 km (0.2 mi)	200 m (600 ft)	1.2 km	(0.8 mi)	2.6 km (1.6 mi)
3305	**119**	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km	(0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km	(0.6 mi)	2.4 km (1.5 mi)
3305	**119**	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.7 km	(0.5 mi)	1.9 km (1.2 mi)
3305 3305	**119** **119**	Compressed gas, toxic, flammable, corrosive, n.o.s. Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	150 m (500 ft)	1.0 km	(0.6 mi)	3.8 km (2.4 mi)	1000 m (3000 ft)	5.6 km	(3.5 mi)	10.2 km (6.3 mi)

3305	**119**	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m	(600 ft)	1.2 km	(0.8 mi)	2.6 km	(1.6 mi)
3305	**119**	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3305	**119**	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3306 3306	**124** **124**	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.5 km	(0.3 mi)	2.5 km	(1.6 mi)	800 m	(2500 ft)	5.2 km	(3.3 mi)	11.0+ km	(7.0+ mi)
3306	**124**	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	800 m	(2500 ft)	4.5 km	(2.8 mi)	9.6 km	(6.0 mi)
3306	**124**	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3306	**124**	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3306 3306	**124** **124**	Compressed gas, toxic, oxidizing, corrosive, n.o.s. Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.5 km	(0.3 mi)	2.5 km	(1.6 mi)	800 m	(2500 ft)	5.2 km	(3.3 mi)	11.0+ km	(7.0+ mi)
3306	**124**	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	800 m	(2500 ft)	4.5 km	(2.8 mi)	9.6 km	(6.0 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)
3306	**124**	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km	(0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km	(0.6 mi)	2.4 km (1.5 mi)
3306	**124**	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.7 km	(0.5 mi)	1.9 km (1.2 mi)
3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s.								
3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km	(0.3 mi)	2.5 km (1.6 mi)	800 m (2500 ft)	5.2 km	(3.3 mi)	11.0+ km (7.0+ mi)
3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km	(0.2 mi)	1.1 km (0.7 mi)	800 m (2500 ft)	4.5 km	(2.8 mi)	9.6 km (6.0 mi)
3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km	(0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km	(0.6 mi)	2.4 km (1.5 mi)
3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.7 km	(0.5 mi)	1.9 km (1.2 mi)

3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s.														
3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.5 km	(0.3 mi)	2.5 km	(1.6 mi)	800 m	(2500 ft)	5.2 km	(3.3 mi)	11.0+ km	(7.0+ mi)
3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	800 m	(2500 ft)	4.5 km	(2.8 mi)	9.6 km	(6.0 mi)
3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s.														
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.6 km	(0.4 mi)	2.5 km	(1.5 mi)	500 m	(1500 ft)	3.0 km	(1.9 mi)	9.0 km	(5.6 mi)
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.2 mi)	1.0 km	(0.6 mi)	400 m	(1250 ft)	2.2 km	(1.4 mi)	4.8 km	(3.0 mi)
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.6 km	(1.6 mi)
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	150 m	(500 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)

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			First ISOLATE in all Directions	Then PROTECT persons Downwind during			First ISOLATE in all Directions	Then PROTECT persons Downwind during		
ID No.	Guide	NAME OF MATERIAL	Meters (Feet)	DAY Kilometers (Miles)		NIGHT Kilometers (Miles)		Meters (Feet)	DAY Kilometers (Miles)		NIGHT Kilometers (Miles)	
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s.										
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.6 km	(0.4 mi)	2.5 km	(1.5 mi)	500 m	(1500 ft)	3.0 km	(1.9 mi)	9.0 km	(5.6 mi)
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.2 mi)	1.0 km	(0.6 mi)	400 m	(1250 ft)	2.2 km	(1.4 mi)	4.8 km	(3.0 mi)
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.6 km	(1.6 mi)
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	150 m	(500 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3309	**119**	Liquefied gas, poisonous, flammable, corrosive, n.o.s.										
3309	**119**	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	150 m	(500 ft)	1.0 km	(0.6 mi)	3.8 km	(2.4 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	10.2 km	(6.3 mi)
3309	**119**	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m	(600 ft)	1.2 km	(0.8 mi)	2.6 km	(1.6 mi)

3309	**119**	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3309	**119**	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3309 3309	**119** **119**	Liquefied gas, toxic, flammable, corrosive, n.o.s. Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	150 m	(500 ft)	1.0 km	(0.6 mi)	3.8 km	(2.4 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	10.2 km	(6.3 mi)
3309	**119**	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m	(600 ft)	1.2 km	(0.8 mi)	2.6 km	(1.6 mi)
3309	**119**	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3309	**119**	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3310 3310	**124** **124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.5 km	(0.3 mi)	2.5 km	(1.6 mi)	800 m	(2500 ft)	5.2 km	(3.3 mi)	11.0+ km	(7.0+ mi)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	800 m	(2500 ft)	4.5 km	(2.8 mi)	9.6 km	(6.0 mi)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)

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			First ISOLATE in all Directions	Then PROTECT persons Downwind during		First ISOLATE in all Directions	Then PROTECT persons Downwind during	
ID No.	Guide	NAME OF MATERIAL	Meters (Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters (Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.7 km (0.5 mi)	1.9 km (1.2 mi)
3310 3310	**124** **124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.5 km (1.6 mi)	800 m (2500 ft)	5.2 km (3.3 mi)	11.0+ km (7.0+ mi)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	800 m (2500 ft)	4.5 km (2.8 mi)	9.6 km (6.0 mi)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.4 km (1.5 mi)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.7 km (0.5 mi)	1.9 km (1.2 mi)
3318	**125**	Ammonia solution, with more than 50% Ammonia	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.7 km (0.5 mi)	1.9 km (1.2 mi)
3355 3355	**119** **119**	Insecticide gas, poisonous, flammable, n.o.s. Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	150 m (500 ft)	1.0 km (0.6 mi)	3.8 km (2.4 mi)	1000 m (3000 ft)	5.6 km (3.5 mi)	10.2. km (6.3 mi)

3355	**119**	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m	600 ft	1.2 km	(0.8 mi)	2.6 km	(1.6 mi)
3355	**119**	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3355	**119**	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3355 3355	**119** **119**	Insecticide gas, toxic, flammable, n.o.s. Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	150 m	(500 ft)	1.0 km	(0.6 mi)	3.8 km	(2.4 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	10.2 km	(6.3 mi)
3355	**119**	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m	(600 ft)	1.2 km	(0.8 mi)	2.6 km	(1.6 mi)
3355	**119**	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.4 km	(1.5 mi)
3355	**119**	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.9 km	(1.2 mi)
3361 3361	**156** **156**	Chlorosilanes, poisonous, corrosive, n.o.s. **(when spilled in water)** Chlorosilanes, toxic, corrosive, n.o.s. **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.6 km	(1.0 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)		Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)	
3362	**155**	Chlorosilanes, poisonous, corrosive, flammable, n.o.s. **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)		60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)	
3362	**155**	Chlorosilanes, toxic, corrosive, flammable, n.o.s. **(when spilled in water)**								
3381	**151**	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)		200 m (600 ft)	2.5 km (1.6 mi)	4.0 km (2.5 mi)	
3381	**151**	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)								
3382	**151**	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)		60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.4 mi)	
3382	**151**	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)								
3383	**131**	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.5 km (0.3 mi)	1.4 km (0.9 mi)		150 m (500 ft)	2.0 km (1.3 mi)	4.7 km (3.0 mi)	
3383	**131**	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)								

3384	**131**	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.8 km	(0.5 mi)
3384	**131**	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)												
3385	**139**	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	30 m	(100 ft)	0.4 km	(0.3 mi)	1.2 km	(0.8 mi)	200 m	(600 ft)	2.5 km	(1.6 mi)	4.0 km	(2.5 mi)
3385	**139**	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)												
3386	**139**	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.4 mi)
3386	**139**	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)												
3387	**142**	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	30 m	(100 ft)	0.4 km	(0.3 mi)	1.2 km	(0.8 mi)	200 m	(600 ft)	2.5 km	(1.6 mi)	4.0 km	(2.5 mi)
3387	**142**	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)												
3388	**142**	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)
3388	**142**	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)												

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)		**NIGHT** Kilometers (Miles)
3389	**154**	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km	(0.2 mi)	0.7 km (0.4 mi)	300 m (1000 ft)	1.5 km	(0.9 mi)	2.6 km (1.6 mi)
3389	**154**	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)								
3390	**154**	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km	(0.3 mi)	0.6 km (0.4 mi)
3390	**154**	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)								
3416	**153**	CN **(when used as a weapon)**	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.3 km	(0.2 mi)	1.2 km (0.8 mi)
3456	**157**	Nitrosylsulfuric acid, solid **(when spilled in water)**	60 m (200 ft)	0.2 km	(0.1 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	0.8 km	(0.5 mi)	2.8 km (1.8 mi)
3456	**157**	Nitrosylsulphuric acid, solid **(when spilled in water)**								
3461	**135**	Aluminum alkyl halides, solid **(when spilled in water)**	30 m (100 ft)	0.1 km	(0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km	(0.3 mi)	1.3 km (0.8 mi)

3488	**131**	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.9 km	(0.6 mi)	2.0 km	(1.2 mi)	400 m	(1250 ft)	4.5 km	(2.8 mi)	7.4 km	(4.6 mi)
3488	**131**	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)												
3489	**131**	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.8 km	(0.5 mi)
3489	**131**	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)												
3490	**155**	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.4 km	(0.9 mi)	150 m	(500 ft)	2.0 km	(1.3 mi)	4.7 km	(3.0 mi)
3490	**155**	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)												
3491	**155**	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.8 km	(0.5 mi)
3491	**155**	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)												

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

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			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)		Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)	
3492	**131**	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.9 km (0.6 mi)	2.0 km (1.2 mi)		400 m (1250 ft)	4.5 km (2.8 mi)	7.4 km (4.6 mi)	
3492	**131**	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)								
3493	**131**	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)		60 m (200 ft)	0.5 km (0.3 mi)	0.8 km (0.5 mi)	
3493	**131**	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)								
3494	**131**	Petroleum sour crude oil, flammable, poisonous	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)		60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.4 mi)	
3494	**131**	Petroleum sour crude oil, flammable, toxic								
3507	**166**	Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)		30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	
3512	**173**	Adsorbed gas, poisonous, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)		30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	
3512	**173**	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone A)								

3512	**173**	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)
3512	**173**	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone C)												
3512	**173**	Adsorbed gas, poisonous, n.o.s. (Inhalation hazard zone D)												
3512	**173**	Adsorbed gas, toxic, n.o.s.	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)
3512	**173**	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone A)												
3512	**173**	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)
3512	**173**	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone C)												
3512	**173**	Adsorbed gas, toxic, n.o.s. (Inhalation hazard zone D)												
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s.	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone A)												
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone C)												
3514	**173**	Adsorbed gas, poisonous, flammable, n.o.s. (Inhalation hazard zone D)												

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ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s.						
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone B)						
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3514	**173**	Adsorbed gas, toxic, flammable, n.o.s. (Inhalation hazard zone D)						
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s.						
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone B)						
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3515	**173**	Adsorbed gas, poisonous, oxidizing, n.o.s. (Inhalation hazard zone D)						

3515	**173**	Adsorbed gas, toxic, oxidizing, n.o.s.														
3515	**173**	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone A)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)
3515	**173**	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone B)														
3515	**173**	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)
3515	**173**	Adsorbed gas, toxic, oxidizing, n.o.s. (Inhalation hazard zone D)														
3516	**173**	Adsorbed gas, poisonous, corrosive, n.o.s.														
3516	**173**	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone A)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)
3516	**173**	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone B)														
3516	**173**	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)
3516	**173**	Adsorbed gas, poisonous, corrosive, n.o.s. (Inhalation hazard zone D)														

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					DAY	**NIGHT**			**DAY**	**NIGHT**
ID No.	**Guide**	**NAME OF MATERIAL**	Meters	(Feet)	Kilometers (Miles)	Kilometers (Miles)	Meters	(Feet)	Kilometers (Miles)	Kilometers (Miles)
3516	**173**	Adsorbed gas, toxic, corrosive, n.o.s.								
3516	**173**	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone A)	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m	(100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)
3516	**173**	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone B)								
3516	**173**	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone C)	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3516	**173**	Adsorbed gas, toxic, corrosive, n.o.s. (Inhalation hazard zone D)								
3517	**173**	Adsorbed gas, poisonous, flammable, corrosive, n.o.s.								
3517	**173**	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone A)	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m	(100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)

3517	**173**	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone B)														
3517	**173**	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)
3517	**173**	Adsorbed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation hazard zone D)														
3517	**173**	Adsorbed gas, toxic, flammable, corrosive, n.o.s														
3517	**173**	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone A)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)
3517	**173**	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone B)														
3517	**173**	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)
3517	**173**	Adsorbed gas, toxic, flammable, corrosive, n.o.s. (Inhalation hazard zone D)														
3518	**173**	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s														
3518	**173**	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone A)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
			First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during		First **ISOLATE** in all Directions	Then **PROTECT** persons Downwind during	
ID No.	**Guide**	**NAME OF MATERIAL**	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)	Meters (Feet)	**DAY** Kilometers (Miles)	**NIGHT** Kilometers (Miles)
3518	**173**	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone B)						
3518	**173**	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3518	**173**	Adsorbed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation hazard zone D)						
3518	**173**	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s.						
3518	**173**	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)
3518	**173**	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone B)						
3518	**173**	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3518	**173**	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation hazard zone D)						
3519	**173**	Boron trifluoride, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3520	**173**	Chlorine, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3521	**173**	Silicon tetrafluoride, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)
3522	**173**	Arsine, adsorbed	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)

3523	**173**	Germane, adsorbed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)
3524	**173**	Phosphorus pentafluoride, adsorbed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)
3525	**173**	Phosphine, adsorbed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)
3526	**173**	Hydrogen selenide, adsorbed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)
9191	**143**	Chlorine dioxide, hydrate, frozen (**when spilled In water**)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.3 mi)
9202	**168**	Carbon monoxide, refrigerated liquid (cryogenic liquid)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	1.2 km	(0.7 mi)	4.4 km	(2.8 mi)
9206	**137**	Methyl phosphonic dichloride	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.2 mi)	0.5 km	(0.3 mi)
9263	**156**	Chloropivaloyl chloride	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.2 mi)	0.3 km	(0.2 mi)
9264	**151**	3,5-Dichloro-2,4,6-trifluoropyridine	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.2 mi)	0.3 km	(0.2 mi)
9269	**132**	Trimethoxysilane	30 m	(100 ft)	0.2 km	(0.2 mi)	0.6 km	(0.4 mi)	100 m	(300 ft)	1.3 km	(0.8 mi)	2.4 km	(1.5 mi)

See Next Page for Table of Water-Reactive Materials Which Produce Toxic Gases

"+" means distance can be larger in certain atmospheric conditions

HOW TO USE TABLE 2 – WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Table 2 lists materials which produce large amounts of Toxic Inhalation Hazard (TIH) (PIH in the US) gases when spilled in water and identifies the TIH gases produced.

The materials are listed by ID number order.

These Water Reactive materials are easily identified in Table 1 as their name is immediately followed by "(**when spilled in water**)".

Note 1: Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (UN1746), Thionyl chloride (UN1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material **is NOT** a TIH and this material **is NOT** spilled in water, **Table 1** and **Table 2 do NOT** apply and safety distances will be found within the appropriate orange guide.

Note 2: Materials classified as a Division 4.3 are substances that, on contact with water, are liable to become spontaneously FLAMMABLE or give off **FLAMMABLE** or sometimes **TOXIC** gases in dangerous quantities. For the purpose of this table, water reactive materials are materials that generate substantial quantities of **TOXIC** gases rapidly after a spill into water. Therefore, a material classified as a Division 4.3 will not always be included in Table 2.

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) (PIH in the US) Gas(es) *When Spilled in Water*

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1162	155	Dimethyldichlorosilane	HCl
1183	139	Ethyldichlorosilane	HCl
1196	155	Ethyltrichlorosilane	HCl
1242	139	Methyldichlorosilane	HCl
1250	155	Methyltrichlorosilane	HCl
1295	139	Trichlorosilane	HCl
1298	155	Trimethylchlorosilane	HCl
1305	155P	Vinyltrichlorosilane	HCl
1305	155P	Vinyltrichlorosilane, stabilized	HCl
1340	139	Phosphorus pentasulfide, free from yellow and white Phosphorus	H_2S
1340	139	Phosphorus pentasulphide, free from yellow and white Phosphorus	H_2S
1360	139	Calcium phosphide	PH_3
1384	135	Sodium dithionite	H_2S SO_2
1384	135	Sodium hydrosulfite	H_2S SO_2
1384	135	Sodium hydrosulphite	H_2S SO_2
1397	139	Aluminum phosphide	PH_3
1419	139	Magnesium aluminum phosphide	PH_3
1432	139	Sodium phosphide	PH_3
1541	155	Acetone cyanohydrin, stabilized	HCN
1680	157	Potassium cyanide	HCN
1680	157	Potassium cyanide, solid	HCN
1689	157	Sodium cyanide	HCN
1689	157	Sodium cyanide, solid	HCN

Chemical Symbols for TIH (PIH in the US) Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

Use this list only when material is spilled in water.

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) (PIH in the US) Gas(es) *When Spilled in Water*

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1716	156	Acetyl bromide	HBr
1717	155	Acetyl chloride	HCl
1724	155	Allyltrichlorosilane, stabilized	HCl
1725	137	Aluminum bromide, anhydrous	HBr
1726	137	Aluminum chloride, anhydrous	HCl
1728	155	Amyltrichlorosilane	HCl
1732	157	Antimony pentafluoride	HF
1741	125	Boron trichloride	HCl
1745	144	Bromine pentafluoride	HF Br_2
1746	144	Bromine trifluoride	HF Br_2
1747	155	Butyltrichlorosilane	HCl
1752	156	Chloroacetyl chloride	HCl
1753	156	Chlorophenyltrichlorosilane	HCl
1754	137	Chlorosulfonic acid (with or without sulfur trioxide mixture)	HCl
1754	137	Chlorosulphonic acid (with or without sulphur trioxide mixture)	HCl
1758	137	Chromium oxychloride	HCl
1762	156	Cyclohexenyltrichlorosilane	HCl
1763	156	Cyclohexyltrichlorosilane	HCl
1765	156	Dichloroacetyl chloride	HCl
1766	156	Dichlorophenyltrichlorosilane	HCl
1767	155	Diethyldichlorosilane	HCl
1769	156	Diphenyldichlorosilane	HCl
1771	156	Dodecyltrichlorosilane	HCl

Chemical Symbols for TIH (PIH in the US) Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

Use this list only when material is spilled in water.

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) (PIH in the US) Gas(es) *When Spilled in Water*

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1777	137	Fluorosulfonic acid	HF
1777	137	Fluorosulphonic acid	HF
1781	156	Hexadecyltrichlorosilane	HCl
1784	156	Hexyltrichlorosilane	HCl
1799	156	Nonyltrichlorosilane	HCl
1800	156	Octadecyltrichlorosilane	HCl
1801	156	Octyltrichlorosilane	HCl
1804	156	Phenyltrichlorosilane	HCl
1806	137	Phosphorus pentachloride	HCl
1808	137	Phosphorus tribromide	HBr
1809	137	Phosphorus trichloride	HCl
1810	137	Phosphorus oxychloride	HCl
1815	132	Propionyl chloride	HCl
1816	155	Propyltrichlorosilane	HCl
1818	157	Silicon tetrachloride	HCl
1828	137	Sulfur chlorides	HCl SO_2 H_2S
1828	137	Sulphur chlorides	HCl SO_2 H_2S
1834	137	Sulfuryl chloride	HCl
1834	137	Sulphuryl chloride	HCl
1836	137	Thionyl chloride	HCl SO_2
1838	137	Titanium tetrachloride	HCl
1898	156	Acetyl iodide	HI
1923	135	Calcium dithionite	H_2S SO_2

Chemical Symbols for TIH (PIH in the US) Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) (PIH in the US) Gas(es) *When Spilled in Water*

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1923	135	Calcium hydrosulfite	H_2S SO_2
1923	135	Calcium hydrosulphite	H_2S SO_2
1929	135	Potassium dithionite	H_2S SO_2
1929	135	Potassium hydrosulfite	H_2S SO_2
1929	135	Potassium hydrosulphite	H_2S SO_2
1931	171	Zinc dithionite	H_2S SO_2
1931	171	Zinc hydrosulfite	H_2S SO_2
1931	171	Zinc hydrosulphite	H_2S SO_2
2004	135	Magnesium diamide	NH_3
2011	139	Magnesium phosphide	PH_3
2012	139	Potassium phosphide	PH_3
2013	139	Strontium phosphide	PH_3
2308	157	Nitrosylsulfuric acid, liquid	NO_2
2308	157	Nitrosylsulfuric acid, solid	NO_2
2308	157	Nitrosylsulphuric acid, liquid	NO_2
2308	157	Nitrosylsulphuric acid, solid	NO_2
2353	132	Butyryl chloride	HCl
2395	132	Isobutyryl chloride	HCl
2434	156	Dibenzyldichlorosilane	HCl
2435	156	Ethylphenyldichlorosilane	HCl
2437	156	Methylphenyldichlorosilane	HCl
2495	144	Iodine pentafluoride	HF
2691	137	Phosphorus pentabromide	HBr

Chemical Symbols for TIH (PIH in the US) Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

Use this list only when material is spilled in water.

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) (PIH in the US) Gas(es) *When Spilled in Water*

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
2692	157	Boron tribromide	HBr
2806	138	Lithium nitride	NH_3
2977	166	Radioactive material, Uranium hexafluoride, fissile	HF
2977	166	Uranium hexafluoride, radioactive material, fissile	HF
2978	166	Radioactive material, Uranium hexafluoride, non fissile or fissile-excepted	HF
2978	166	Uranium hexafluoride, radioactive material, non fissile or fissile-excepted	HF
2985	155	Chlorosilanes, flammable, corrosive, n.o.s	HCl
2986	155	Chlorosilanes, corrosive, flammable, n.o.s	HCl
2987	156	Chlorosilanes, corrosive, n.o.s	HCl
2988	139	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	HCl
3048	157	Aluminum phosphide pesticide	PH_3
3049	138	Metal alkyl halides, water-reactive, n.o.s	HCl
3049	138	Metal aryl halides, water-reactive, n.o.s	HCl
3052	135	Aluminum alkyl halides, liquid	HCl
3052	135	Aluminum alkyl halides, solid	HCl
3361	156	Chlorosilanes, poisonous, corrosive, n.o.s.	HCl
3361	156	Chlorosilanes, toxic, corrosive, n.o.s.	HCl
3362	155	Chlorosilanes, poisonous, corrosive, flammable, n.o.s.	HCl
3362	155	Chlorosilanes, toxic, corrosive, flammable, n.o.s.	HCl
3456	157	Nitrosylsulfuric acid, solid	NO_2
3456	157	Nitrosylsulphuric acid, solid	NO_2

Chemical Symbols for TIH (PIH in the US) Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

Use this list only when material is spilled in water.

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) (PIH in the US) Gas(es) *When Spilled in Water*

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
3461	135	Aluminum alkyl halides, solid	HCl
3507	166	Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted	HF
9191	143	Chlorine dioxide, hydrate, frozen	Cl_2

Chemical Symbols for TIH (PIH in the US) Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

Use this list only when material is spilled in water.

NOTES

HOW TO USE TABLE 3 – INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH (PIH in the US) GASES

Table 3 lists Toxic Inhalation Hazard materials that may be more commonly encountered.

The selected materials are:

- Ammonia, anhydrous (UN1005)
- Chlorine (UN1017)
- Ethylene oxide (UN1040)
- Hydrogen chloride, anhydrous (UN1050) and Hydrogen chloride, refrigerated liquid (UN2186)
- Hydrogen fluoride, anhydrous (UN1052)
- Sulfur dioxide/Sulphur dioxide (UN1079)

The materials are presented in alphabetical order and provide Initial Isolation and Protective Action Distances **FOR LARGE SPILLS** (more than 208 liters or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and different wind speeds.

Estimating Wind Speed from Environmental Clues

mph	km/h	Wind Description	Specifications
< 6	< 10	Low wind	Wind felt on face; leaves rustle; ordinary vane moved by wind
6 - 12	10 - 20	Moderate wind	Raises dust, loose paper; small branches are moved
> 12	> 20	High wind	Large branches in motion; whistling heard in telephone wires; umbrellas used with difficulty

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH (PIH in the US) GASES

	First ISOLATE in all Directions		Then **PROTECT** persons Downwind during											
			DAY						NIGHT					
			Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)		Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)	
	Meters	(Feet)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)
TRANSPORT CONTAINER	**UN1005 Ammonia, anhydrous: Large Spills**													
Rail tank car	300	(1000)	1.7	(1.1)	1.3	(0.8)	1.0	(0.6)	4.3	(2.7)	2.3	(1.4)	1.3	(0.8)
Highway tank truck or trailer	150	(500)	0.9	(0.6)	0.5	(0.3)	0.4	(0.3)	2.0	(1.3)	0.8	(0.5)	0.6	(0.4)
Agricultural nurse tank	60	(200)	0.5	(0.3)	0.3	(0.2)	0.3	(0.2)	1.3	(0.8)	0.3	(0.2)	0.3	(0.2)
Multiple small cylinders	30	(100)	0.3	(0.2)	0.2	(0.1)	0.1	(0.1)	0.7	(0.5)	0.3	(0.2)	0.2	(0.1)
TRANSPORT CONTAINER	**UN1017 Chlorine: Large Spills**													
Rail tank car	1000	(3000)	9.9	(6.2)	6.4	(4.0)	5.1	(3.2)	11+	(7+)	9.0	(5.6)	6.7	(4.2)
Highway tank truck or trailer	600	(2000)	5.8	(3.6)	3.4	(2.1)	2.9	(1.8)	6.7	(4.3)	5.0	(3.1)	4.1	(2.5)
Multiple ton cylinders	300	(1000)	2.1	(1.3)	1.3	(0.8)	1.0	(0.6)	4.0	(2.5)	2.4	(1.5)	1.3	(0.8)
Multiple small cylinders or single ton cylinder	150	(500)	1.5	(0.9)	0.8	(0.5)	0.5	(0.3)	2.9	(1.8)	1.3	(0.8)	0.6	(0.4)

"+" means distance can be larger in certain atmospheric conditions

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH (PIH in the US) GASES

	First ISOLATE in all Directions		Then **PROTECT** persons Downwind during											
			DAY						NIGHT					
			Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)		Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)	
	Meters	(Feet)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)
TRANSPORT CONTAINER	**UN1040 Ethylene oxide: Large Spills**													
Rail tank car	200	(600)	1.6	(1.0)	0.8	(0.5)	0.7	(0.5)	3.3	(2.1)	1.4	(0.9)	0.8	(0.5)
Highway tank truck or trailer	100	(300)	0.9	(0.6)	0.5	(0.3)	0.4	(0.3)	2.0	(1.3)	0.7	(0.4)	0.4	(0.3)
Multiple small cylinders or single ton cylinder	30	(100)	0.4	(0.3)	0.2	(0.1)	0.1	(0.1)	0.9	(0.6)	0.3	(0.2)	0.2	(0.1)
TRANSPORT CONTAINER	**UN1050 Hydrogen chloride, anhydrous: Large Spills** **UN2186 Hydrogen chloride, refrigerated liquid: Large Spills**													
Rail tank car	500	(1500)	3.7	(2.3)	2.0	(1.2)	1.7	(1.1)	9.9	(6.2)	3.4	(2.1)	2.3	(1.5)
Highway tank truck or trailer	200	(600)	1.5	(0.9)	0.8	(0.5)	0.6	(0.4)	3.8	(2.4)	1.5	(0.9)	0.8	(0.5)
Multiple ton cylinders	30	(100)	0.4	(0.3)	0.2	(0.1)	0.1	(0.1)	1.1	(0.7)	0.3	(0.2)	0.2	(0.1)
Multiple small cylinders or single ton cylinder	30	(100)	0.3	(0.2)	0.2	(0.1)	0.1	(0.1)	0.9	(0.6)	0.3	(0.2)	0.2	(0.1)

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH (PIH in the US) GASES

	First ISOLATE in all Directions		Then **PROTECT** persons Downwind during											
			DAY						NIGHT					
			Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)		Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)	
	Meters	(Feet)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)
TRANSPORT CONTAINER	**UN1052 Hydrogen fluoride, anhydrous: Large Spills**													
Rail tank car	400	(1250)	3.1	(1.9)	1.9	(1.2)	1.6	(1.0)	6.1	(3.8)	2.9	(1.8)	1.9	(1.2)
Highway tank truck or trailer	200	(700)	1.9	(1.2)	1.0	(0.7)	0.9	(0.6)	3.4	(2.2)	1.6	(1.0)	0.9	(0.6)
Multiple small cylinders or single ton cylinder	100	(300)	0.8	(0.5)	0.4	(0.2)	0.3	(0.2)	1.6	(1.0)	0.5	(0.3)	0.3	(0.2)
TRANSPORT CONTAINER	**UN1079 Sulfur dioxide/Sulphur dioxide: Large Spills**													
Rail tank car	1000	(3000)	11+	(7+)	11+	(7+)	7.0	(4.4)	11+	(7+)	11+	(7+)	9.8	(6.1)
Highway tank truck or trailer	1000	(3000)	11+	(7+)	5.8	(3.6)	5.0	(3.1)	11+	(7+)	8.0	(5.0)	6.1	(3.8)
Multiple ton cylinders	500	(1500)	5.2	(3.2)	2.4	(1.5)	1.8	(1.1)	7.5	(4.7)	4.0	(2.5)	2.8	(1.7)
Multiple small cylinders or single ton cylinder	200	(600)	3.1	(1.9)	1.5	(0.9)	1.1	(0.7)	5.6	(3.5)	2.4	(1.5)	1.5	(0.9)

"+" means distance can be larger in certain atmospheric conditions

ERG2016 USER'S GUIDE

The 2016 Emergency Response Guidebook (ERG2016) was developed jointly by Transport Canada (TC), the U.S. Department of Transportation (DOT), the Secretariat of Communications and Transport of Mexico (SCT) and with the collaboration of CIQUIME (Centro de Información Química para Emergencias) of Argentina, for use by fire fighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving dangerous goods. **It is primarily a guide to aid first responders in quickly identifying the specific or generic hazards of the material(s) involved in the incident, and protecting themselves and the general public during the initial response phase of the incident.** For the purposes of this guidebook, the "initial response phase" is that period following arrival at the scene of an incident during which the presence and/or identification of dangerous goods is confirmed, protective actions and area securement are initiated, and assistance of qualified personnel is requested. It is not intended to provide information on the physical or chemical properties of dangerous goods.

This guidebook will assist responders in making initial decisions upon arriving at the scene of a dangerous goods incident. It should not be considered as a substitute for emergency response training, knowledge or sound judgment. ERG2016 does not address all possible circumstances that may be associated with a dangerous goods incident. It is primarily designed for use at a dangerous goods incident occurring on a highway or railroad. Be mindful that there may be limited value in its application at fixed facility locations.

ERG2016 incorporates dangerous goods lists from the most recent United Nations Recommendations as well as from other international and national regulations. Explosives are not listed individually by either proper shipping name or ID Number. They do, however, appear under the general heading "Explosives" on the first page of the ID Number index (yellow-bordered pages) and alphabetically in the Name of Material index (blue-bordered pages). Also, the letter **(P)** following the guide number in the yellow-bordered and blue-bordered pages identifies those materials which present a polymerization hazard under certain conditions, for example: Acrolein, stabilized **131P.**

First responders at the scene of a dangerous goods incident should seek additional specific information about any material in question as soon as possible. The information received by contacting the appropriate emergency response agency, by calling the emergency response telephone number on the shipping document, or by consulting the information on or accompanying the shipping document, may be more specific and accurate than this guidebook in providing guidance for the materials involved.

BEFORE AN EMERGENCY – BECOME FAMILIAR WITH THIS GUIDEBOOK! In the U.S., according to the requirements of the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA, 29 CFR 1910.120), and regulations issued by the U.S. Environmental Protection Agency (EPA, 40 CFR Part 311), first responders must be trained regarding the use of this guidebook.

Guidebook Contents

1-Yellow-bordered pages: Index list of dangerous goods in numerical order of ID number. This section quickly identifies the guide to be consulted from the ID Number of the material involved. This list displays the 4-digit ID number of the material followed by its assigned emergency response guide and the material name.

For example:	**ID No.**	**GUIDE No.**	**Name of Material**
	1090	127	Acetone

2-Blue-bordered pages: Index list of dangerous goods in alphabetical order of material name. This section quickly identifies the guide to be consulted from the name of the material involved. This list displays the name of the material followed by its assigned emergency response guide and 4-digit ID number.

For example:	**Name of Material**	**GUIDE No.**	**ID No.**
	Sulfuric acid	137	1830

3-Orange-bordered pages: This section is the most important section of the guidebook because it is where all safety recommendations are provided. It comprises a total of 63 individual guides, presented in a two-page format. Each guide provides safety recommendations and emergency response information to protect yourself and the public. The left-hand page provides safety-related information whereas the right-hand page provides emergency response guidance and activities for fire situations, spill or leak incidents and first aid. Each guide is designed to cover a group of materials which possess similar chemical and toxicological characteristics.

The guide title identifies the general hazards of the dangerous goods covered.

For example: **GUIDE 124** - Gases-Toxic and/or Corrosive-Oxidizing.

Each guide is divided into three main sections: the first section describes **potential hazards** that the material may display in terms of fire/explosion and health effects upon exposure. The highest potential is listed first. The emergency responder should consult this section first. This allows the responder to make decisions regarding the protection of the emergency response team as well as the surrounding population.

The second section outlines suggested **public safety** measures based on the situation at hand. It provides general information regarding immediate isolation of the incident site, recommended type of protective clothing and respiratory protection. Suggested evacuation distances are listed for small and large spills and for fire situations (fragmentation hazard). It also directs the reader to consult the tables listing Toxic Inhalation Hazard (TIH) (PIH in the US) materials, chemical warfare agents and water-reactive materials (green-bordered pages) when the material is highlighted in the yellow-bordered and blue-bordered pages.

The third section covers **emergency response** actions, including first aid. It outlines special precautions for incidents which involve fire, spill or chemical exposure. Several recommendations are listed under each part which will further assist in the decision making process. The information on first aid is general guidance prior to seeking medical care.

4-Green-bordered pages: This section contains three tables.

Table 1 lists, by ID number order, TIH (PIH in the US) materials, including certain chemical warfare agents, and water-reactive materials which produce toxic gases upon contact with water. This table provides two different types of recommended safe distances which are "Initial isolation distances" and "Protective action distances". The materials are highlighted in green for easy identification in both numeric (yellow-bordered pages) and alphabetic (blue-bordered pages) lists of the guidebook. This table provides distances for both small (approximately 208 liters (55 US gallons) or less for liquids and 300 kilograms (660 pounds) or less for solids when spilled in water) and large spills (more than 208 liters (55 US gallons) for liquids and more than 300 kilograms (660 pounds) for solids when spilled in water) for all highlighted materials. The list is further subdivided into daytime and nighttime situations. This is necessary due to varying atmospheric conditions which greatly affect the size of the hazardous area. The distances change from daytime to nighttime due to different mixing and dispersion conditions in the air. During the night, the air is generally calmer and this causes the material to disperse less and therefore create a toxic zone which is greater than would usually occur during the day. During the day, a more active atmosphere will cause a greater dispersion of the material resulting in a lower concentration of the material in the surrounding air. The actual area where toxic levels are reached will be smaller (due to increased dispersion). In fact, it is the quantity or concentration of the material vapor that poses problems not its mere presence.

The "Initial Isolation Distance" is a distance within which all persons should be considered for evacuation <u>in all directions</u> from the actual spill/leak source. It is a distance (radius) which defines a circle (Initial Isolation Zone) within which persons may be exposed to dangerous concentrations upwind of the source and may be exposed to life-threatening concentrations downwind of the source. For example, in the case of Compressed gas, toxic, n.o.s., UN1955, Inhalation Hazard Zone A, the isolation distance for small spills is 100 meters (300 feet), therefore, representing an evacuation circle of 200 meters (600 feet) in diameter.

For the same material, the "Protective Action Distance" for a small spill is 0.5 kilometers (0.3 miles) for a daytime incident and 2.5 kilometers (1.6 miles) for a nighttime incident, these distances represent a downwind distance from the spill/leak source within which Protective Actions could be implemented. Protective Actions are those steps taken to preserve the health and safety of emergency responders and the public. People in this area could be evacuated and/or sheltered in-place. For more information, consult pages 289 to 295.

Toxic Inhalation Hazard (TIH) Materials

A TIH (PIH in the US) material is a gas or volatile liquid which is known to be so toxic to humans as to pose a hazard to health during transportation, or in the absence of adequate data on human toxicity, is presumed to be toxic to humans because when tested on laboratory animals it has a Lethal Concentration 50 (LC50) value of not more than 5000 ppm.

It is important to note that even though the term zone is used, the hazard zones do not represent any actual area or distance. The assignment of the zones is strictly a function of

their Lethal Concentration 50 (LC50); for example, TIH Zone A is more toxic than Zone D. All distances which are listed in the green-bordered pages are calculated by the use of mathematical models for each TIH material. For the assignment of hazard zones refer to the glossary.

Table 2 lists, by ID number order, materials that produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water and identifies the TIH gases produced. These Water Reactive materials are easily identified in **Table 1** as their name is immediately followed by (**when spilled in water**). Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (UN1746), Thionyl chloride (UN1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material is NOT a TIH, and this material is NOT spilled in water, **Table 1** and **Table 2** do not apply and safety distances will be found within the appropriate orange-bordered guide.

Table 3 provides, by alphabetical order of material name, initial isolation and protective action distances for six Toxic Inhalation Hazard materials that may be more commonly encountered. The selected materials are:

- Ammonia, anhydrous (UN1005)
- Chlorine (UN1017)
- Ethylene oxide (UN1040)
- Hydrogen chloride, anhydrous (UN1050) and Hydrogen chloride, refrigerated liquid (UN2186)
- Hydrogen fluoride, anhydrous (UN1052)
- Sulfur dioxide/Sulphur dioxide (UN1079)

The table provides Initial Isolation and Protective Action Distances for large spills (more than 208 liters or 55 US gallons) involving different container types (therefore different volume capacities) for day-time and night-time situations and different wind speeds.

Isolation and Evacuation Distances

Isolation or evacuation distances are shown in the guides (orange-bordered pages) and in the Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages). This may confuse users not thoroughly familiar with ERG2016.

It is important to note that some guides refer only to non-TIH (PIH in the US) materials (37 guides), some refer to both TIH and non-TIH materials (21 guides) and some (5 guides) refer only to TIH or Water-reactive materials (WRM). A guide refers to both TIH and non-TIH materials (for example see GUIDE 131) when the following sentence appears under the title EVACUATION-Spill: “See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under ‘PUBLIC SAFETY.’” A guide refers only to TIH

or WRM materials (for example see GUIDE 124) when the following sentence appears under the title EVACUATION-Spill: “See Table 1 - Initial Isolation and Protective Action Distances”. If the previous sentences do not appear in a guide, then this particular guide refers only to non-TIH materials (for example see GUIDE 128).

In order to identify appropriate isolation and protective action distances, use the following:

If you are dealing with a **TIH/WRM/Chemical warfare** material (highlighted entries in the index lists), the isolation and evacuation distances are found directly in the green-bordered pages. The guides (orange-bordered pages) also remind the user to refer to the green-bordered pages for evacuation-specific information involving highlighted materials.

If you are dealing with a **non-TIH material but the guide refers to both TIH and non-TIH materials,** an immediate isolation distance is provided under the heading PUBLIC SAFETY as a precautionary measure to prevent injuries. It applies to the non-TIH materials only. In addition, for evacuation purposes, the guide informs the user under the title EVACUATION-Spill to increase, for non-highlighted materials, in the downwind direction, if necessary, the immediate isolation distance listed under “PUBLIC SAFETY”. For example, GUIDE 131 – Flammable Liquids-Toxic, instructs the user to: "As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions." In case of a large spill, the isolation area could be expanded from 50 meters (150 feet) to a distance deemed as safe by the on-scene commander and emergency responders.

If you are dealing with a **non-TIH material and the guide refers only to non-TIH materials,** the immediate isolation and evacuation distances are specified as actual distances in the guide (orange-bordered pages) and are not referenced in the green-bordered pages.

Note 1: If an entry is highlighted in green in either the yellow-bordered or blue-bordered pages AND THERE IS NO FIRE, go directly to Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) and look up the ID number and name of material to obtain initial isolation and protective action distances. IF A FIRE IS INVOLVED, ALSO CONSULT the assigned guide (orange-bordered pages) and apply as appropriate the evacuation information shown under PUBLIC SAFETY.

Note 2: If the name in **Table 1** is shown with “***(when spilled in water)***”, these materials produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water. Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (UN1746), Thionyl chloride (UN1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material **is NOT** a TIH and this material **is NOT** spilled in water, **Table 1** and **Table 2** do not apply and safety distances will be found within the appropriate orange-bordered guide.

PROTECTIVE CLOTHING

Street Clothing and Work Uniforms. These garments, such as uniforms worn by police and emergency medical services personnel, provide almost no protection from the harmful effects of dangerous goods.

Structural Fire Fighters' Protective Clothing (SFPC). This category of clothing, often called turnout or bunker gear, means the protective clothing normally worn by fire fighters during structural fire fighting operations. It includes a helmet, coat, pants, boots, gloves and a hood to cover parts of the head not protected by the helmet and facepiece. This clothing must be used with full-facepiece positive pressure self-contained breathing apparatus (SCBA). This protective clothing should, at a minimum, meet the OSHA Fire Brigades Standard (29 CFR 1910.156). Structural fire fighters' protective clothing provides limited protection from heat and cold, but may not provide adequate protection from the harmful vapors or liquids that are encountered during dangerous goods incidents. Each guide includes a statement about the use of SFPC in incidents involving those materials referenced by that guide. Some guides state that SFPC provides limited protection. In those cases, the responder wearing SFPC and SCBA may be able to perform an expedient, that is, quick "in-and-out", operation. However, this type of operation can place the responder at risk of exposure, injury or death. The incident commander makes the decision to perform this operation only if an overriding benefit can be gained (i.e., perform an immediate rescue, turn off a valve to control a leak, etc.). The coverall-type protective clothing customarily worn to fight fires in forests or wildlands is not SFPC and **is not** recommended nor referred to elsewhere in this guidebook.

Positive Pressure Self-Contained Breathing Apparatus (SCBA). This apparatus provides a constant, positive pressure flow of air within the facepiece, even if one inhales deeply while doing heavy work. Use apparatus certified by NIOSH and the Department of Labor/Mine Safety and Health Administration in accordance with 42 CFR Part 84. Use it in accordance with the requirements for respiratory protection specified in OSHA 29 CFR 1910.134 (Respiratory Protection) and/or 29 CFR 1910.156 (f) (Fire Brigades Standard). Chemical-cartridge respirators or other filtering masks are not acceptable substitutes for positive pressure self-contained breathing apparatus. Demand-type SCBA does not meet the OSHA 29 CFR 1910.156 (f)(1)(i) of the Fire Brigades Standard. If it is suspected that a Chemical Warfare Agent (CW) is involved, the use of NIOSH-certified respirators with CBRN protection are highly recommended.

Respirators. N95 respirator is the most common of the seven types of particulate filtering facepiece respirators. This product filters at least 95% of airborne particles (0.3 microns) but is not resistant to oil. N95 filtering facepiece respirators do not provide protection against gas and vapor exposures. PAPR (Powered Air-Purifying Respirator) is an air-purifying respirator that uses a blower to force ambient air through the air-purifying cartridge or filter into the facepiece. A PAPR is not a supplied-air respirator. A PAPR does not supply oxygen or air from a separate source (i.e., cylinders).

Chemical Protective Clothing and Equipment. Safe use of this type of protective clothing and equipment requires specific skills developed through training and experience. It is generally not available to, or used by, first responders. This type of special clothing may protect against one chemical, yet be readily permeated by chemicals for which it was not designed. Therefore, protective clothing should not be used unless it is compatible with the released material. This type of special clothing offers little or no protection against heat and/or cold. Examples of this type of equipment have been described as (1) Vapor Protective Suits (NFPA 1991), also known as Totally-Encapsulating Chemical Protective (TECP) Suits or Level A* protection (OSHA 29 CFR 1910.120, Appendix A & B), and (2) Liquid-Splash Protective Suits (NFPA 1992), also known as Level B* or C* protection (OSHA 29 CFR 1910.120, Appendix A & B) or suits for chemical/biological terrorism incidents (NFPA 1994), class 1, 2 or 3 Ensembles and Standard CAN/CGSB/CSA-Z1610-11 – Protection of first responders from chemical, biological, radiological, and nuclear (CBRN) events (2011). No single protective clothing material will protect you from all dangerous goods. Do not assume any protective clothing is resistant to cold and/or heat or flame exposure unless it is so certified by the manufacturer (NFPA 1991 5-3 Flammability Resistance Test and 5-6 Cold Temperature Performance Test).

* Consult glossary for additional protection levels under the heading “Protective Clothing”.

FIRE AND SPILL CONTROL

FIRE CONTROL

Water is the most common and generally most available fire extinguishing agent. Exercise caution in selecting a fire extinguishing method since there are many factors to be considered in an incident. Water may be ineffective in fighting fires involving some materials; its effectiveness depends greatly on the method of application.

Fires involving a spill of flammable liquids are generally controlled by applying a fire fighting foam to the surface of the burning material. Fighting flammable liquid fires requires foam concentrate which is chemically compatible with the burning material, correct mixing of the foam concentrate with water and air, and careful application and maintenance of the foam blanket. There are two general types of fire fighting foam: regular and alcohol-resistant. Examples of regular foam are protein-base, fluoroprotein, and aqueous film-forming foam (AFFF). Some flammable liquids, including many petroleum products, can be controlled by applying regular foam. Other flammable liquids, including polar solvents (flammable liquids which are water soluble) such as alcohols and ketones, have different chemical properties. A fire involving these materials cannot be easily controlled with regular foam and requires application of alcohol-resistant foam. Polar solvent fires may be difficult to control and require a higher foam application rate than other flammable liquid fires (see NFPA/ANSI Standards 11 and 11A for further information). Refer to the appropriate guide to determine which type of foam is recommended. Although it is impossible to make specific recommendations for flammable liquids which have subsidiary corrosive or toxic hazards, alcohol-resistant foam may be effective for many of these materials. The emergency response telephone number on the shipping document, or the appropriate emergency response agency, should be contacted as soon as possible for guidance on the proper fire extinguishing agent to use. The final selection of the agent and method depends on many factors such as incident location, exposure hazards, size of the fire, environmental concerns, as well as the availability of extinguishing agents and equipment at the scene.

WATER REACTIVE MATERIALS

Water is sometimes used to flush spills and to reduce or direct vapors in spill situations. Some of the materials covered by the guidebook can react violently or even explosively with water. In these cases, consider letting the fire burn or leaving the spill alone (except to prevent its spreading by diking) until additional technical advice can be obtained. The applicable guides clearly warn you of these potentially dangerous reactions. These materials require technical advice since:

(1) water getting inside a ruptured or leaking container may cause an explosion;

(2) water may be needed to cool adjoining containers to prevent their rupturing (exploding) or further spread of the fires;

(3) water may be effective in mitigating an incident involving a water-reactive material only if it can be applied at a sufficient flooding rate for an extended period; and

(4) the products from the reaction with water may be more toxic, corrosive, or otherwise more undesirable than the product of the fire without water applied.

When responding to an incident involving water-reactive materials, take into account the existing conditions such as wind, precipitation, location and accessibility to the incident, as well as the availability of the agents to control the fire or spill. Because there are variables to consider, the decision to use water on fires or spills involving water-reactive materials should be based on information from an authoritative source; for example, a producer of the material, who can be contacted through the emergency response telephone number or the appropriate emergency response agency.

VAPOR CONTROL

Limiting the amount of vapor released from a pool of flammable or corrosive liquids is an operational concern. It requires the use of proper protective clothing, specialized equipment, appropriate chemical agents, and skilled personnel. Before engaging in vapor control, get advice from an authoritative source as to the proper tactics.

There are several ways to minimize the amount of vapors escaping from pools of spilled liquids, such as special foams, adsorbing agents, absorbing agents, and neutralizing agents. To be effective, these vapor control methods must be selected for the specific material involved and performed in a manner that will mitigate, not worsen, the incident.

Where specific materials are known, such as at manufacturing or storage facilities, it is desirable for the dangerous goods response team to prearrange with the facility operators to select and stockpile these control agents in advance of a spill. In the field, first responders may not have the most effective vapor control agent for the material available. They are likely to have only water and only one type of fire fighting foam on their vehicles. If the available foam is inappropriate for use, they are likely to use water spray. Because the water is being used to form a vapor seal, care must be taken not to churn or further spread the spill during application. Vapors that do not react with water may be directed away from the site using the air currents surrounding the water spray. Before using water spray or other methods to safely control vapor emission or to suppress ignition, obtain technical advice, based on specific chemical name identification.

BLEVE (Boiling Liquid Expanding Vapor Explosion)

The following section presents, in a two-page format, background information on BLEVEs and includes a chart that provides important safety-related information to consider when confronted with this type of situation involving Liquefied Petroleum Gases (LPG), UN1075. LPGs include the following flammable gases: Butane, UN1011; Butylene, UN1012; Isobutylene, UN1055; Propylene, UN1077; Isobutane, UN1969; and Propane, UN1978.

What are the main hazards from a BLEVE?

The main hazards from a propane or LPG BLEVE are:

- fire
- thermal radiation from the fire
- blast
- projectiles

The danger from these decreases as you move away from the BLEVE centre. The furthest reaching hazard is projectiles.

This information was prepared for Transport Canada, the Canadian Association of Fire Chiefs and the Propane Gas Association of Canada Inc. by Dr. A. M. Birk, Queen's University, Kingston (Ontario) Canada.

For a video with information on critical safety issues concerning BLEVEs, please visit http://www.tc.gc.ca/eng/tdg/publications-menu-1238.html. This video can be viewed directly on the website. To order a DVD copy of the video, contact us by email at: TDG-RD-TMD@tc.gc.ca.

BLEVE – SAFETY PRECAUTIONS

Use with caution. The following table gives a summary of tank properties, critical times, critical distances and cooling water flow rates for various tank sizes. This table is provided to give responders some guidance but it should be used with caution.

Tank dimensions are approximate and can vary depending on the tank design and application.

Minimum time to failure is based on ***severe torch fire impingement*** on the vapor space of a tank in good condition, and is approximate. Tanks may fail earlier if they are damaged or corroded. Tanks may fail minutes or hours later than these minimum times depending on the conditions. It has been assumed here that the tanks are not equipped with thermal barriers or water spray cooling.

Minimum time to empty is based on an engulfing fire with a properly sized pressure relief valve. If the tank is only partially engulfed, then time to empty will increase (i.e., if tank is 50% engulfed, then the tanks will take twice as long to empty). Once again, it has been assumed that the tank is not equipped with a thermal barrier or water spray.

Tanks equipped with thermal barriers or water spray cooling significantly increase the times to failure and the times to empty. A thermal barrier can reduce the heat input to a tank by a factor of ten or more. This means it could take ten times as long to empty the tank through the Pressure Relief Valve (PRV).

Fireball radius and emergency response distance is based on mathematical equations and is approximate. They assume spherical fireballs and this is not always the case.

Two safety distances for public evacuation. The minimum distance is based on tanks that are launched with a small elevation angle (i.e., a few degrees above horizontal). This is most common for horizontal cylinders. The preferred evacuation distance has more margin of safety since it assumes the tanks are launched at a 45 degree angle to the horizontal. This might be more appropriate if a vertical cylinder is involved.

It is understood that these distances are very large and may not be practical in a highly populated area. However, it should be understood that the risks increase rapidly the closer you are to a BLEVE. Keep in mind that the furthest reaching projectiles tend to come off in the zones 45 degrees on each side of the tank ends.

Water flow rate is based on 5 ($\sqrt{\text{capacity (USgal)}}$) = USgal/min needed to cool tank metal.

Warning: the data given are approximate and should only be used with extreme caution. For example, where times are given for tank failure or tank emptying through the pressure relief valve – these times are typical but they can vary from situation to situation. Therefore, never risk life based on these times.

WARNING: The data given are approximate and should only be used with extreme caution. These times can vary from situation to situation. LPG tanks have been known to BLEVE within minutes. Therefore, never risk life based on these times.

BLEVE
(USE WITH CAUTION)

Capacity		Diameter		Length		Propane Mass		Minimum time to failure for severe torch	Approximate time to empty for engulfing fire	Fireball radius		Emergency response distance		Minimum evacuation distance		Preferred evacuation distance		Cooling water flow rate	
Litres	(Gallons)	Meters	(Feet)	Meters	(Feet)	Kilograms	(Pounds)	Minutes	Minutes	Meters	(Feet)	Meters	(Feet)	Meters	(Feet)	Meters	(Feet)	Litres/min	USgal/min
100	(26.4)	0.3	(1)	1.5	(4.9)	40	(88)	4	8	10	(33)	90	(295)	154	(505)	307	(1007)	94.6	25
400	(106)	0.61	(2)	1.5	(4.9)	160	(353)	4	12	16	(53)	90	(295)	244	(801)	488	(1601)	189.3	50
2000	(528)	0.96	(3.2)	3	(9.8)	800	(1764)	5	18	28	(92)	111	(364)	417	(1368)	834	(2736)	424	112
4000	(1057)	1	(3.3)	4.9	(16.1)	1600	(3527)	5	20	35	(115)	140	(459)	525	(1722)	1050	(3445)	598	158
8000	(2113)	1.25	(4.1)	6.5	(21.3)	3200	(7055)	6	22	44	(144)	176	(577)	661	(2169)	1323	(4341)	848	224
22000	(5812)	2.1	(6.9)	6.7	(22)	8800	(19400)	7	28	62	(203)	247	(810)	926	(3038)	1852	(6076)	1404	371
42000	(11095)	2.1	(6.9)	11.8	(38.7)	16800	(37037)	7	32	77	(253)	306	(1004)	1149	(3770)	2200	(7218)	1938	512
82000	(21662)	2.75	(9)	13.7	(45)	32800	(72310)	8	40	96	(315)	383	(1257)	1435	(4708)	2200	(7218)	2710	716
140000	(36984)	3.3	(10.8)	17.2	(56.4)	56000	(123457)	9	45	114	(374)	457	(1499)	1715	(5627)	2200	(7218)	3539	935

CRIMINAL/TERRORIST USE OF CHEMICAL/BIOLOGICAL/RADIOLOGICAL AGENTS

The following is intended to supply information to first responders for use in making a preliminary assessment of a situation that they suspect involves criminal/terrorist use of chemical, biological agents and/or radioactive materials (CBRN). To aid in the assessment, a list of observable indicators of the use and/or presence of a CB agent or radioactive material is provided in the following paragraphs. This section ends with a Safe Standoff Distance Chart for various threats when Improvised Explosive Devices are involved.

DIFFERENCES BETWEEN A CHEMICAL, BIOLOGICAL AND RADIOLOGICAL AGENT

Chemical and biological agents as well as radioactive materials can be dispersed in the air we breathe, the water we drink, or on surfaces we physically contact. Dispersion methods may be as simple as opening a container, using conventional (garden) spray devices, or as elaborate as detonating an improvised explosive device.

Chemical Incidents are characterized by the rapid onset of medical symptoms (minutes to hours) and easily observed signatures (colored residue, dead foliage, pungent odor, dead insects and animals).

Biological Incidents are characterized by the onset of symptoms in hours to days. Typically, there will be no characteristic signatures because biological agents are usually odorless and colorless. Because of the delayed onset of symptoms in a biological incident, the area affected may be greater due to the movement of infected individuals.

Radiological Incidents are characterized by the onset of symptoms, if any, in days to weeks or longer. Typically, there will be no characteristic signatures because radioactive materials are usually odorless and colorless. Specialized equipment is required to determine the size of the affected area, and whether the level of radioactivity presents an immediate or long-term health hazard. Because radioactivity is not detectable without special equipment, the affected area may be greater due to the migration of contaminated individuals.

At the levels created by most probable sources, not enough radiation would be generated to kill people or cause severe illness. In a radiological incident generated by a “dirty bomb”, or Radiological Dispersal Device (RDD), in which a conventional explosive is detonated to spread radioactive contamination, the primary hazard is from the explosion. However, certain radioactive materials dispersed in the air could contaminate up to several city blocks, creating fear and possibly panic, and requiring potentially costly cleanup.

INDICATORS OF A POSSIBLE CHEMICAL INCIDENT

Dead animals/birds/fish	Not just an occasional road kill, but numerous animals (wild and domestic, small and large), birds, and fish in the same area.
Lack of insect life	If normal insect activity (ground, air, and/or water) is missing, check the ground/water surface/shore line for dead insects. If near water, check for dead fish/aquatic birds.

INDICATORS OF A POSSIBLE CHEMICAL INCIDENT (Continued)

Unexplained odors	Smells may range from fruity to flowery to sharp/pungent to garlic/horseradish-like to bitter almonds/peach kernels to newly mown hay. It is important to note that the particular odor is completely out of character with its surroundings.
Unusual numbers of dying or sick people (mass casualties)	Health problems including nausea, disorientation, difficulty in breathing, convulsions, localized sweating, conjunctivitis (reddening of eyes/nerve agent symptoms), erythema (reddening of skin/vesicant symptoms) and death.
Pattern of casualties	Casualties will likely be distributed downwind, or if indoors, by the air ventilation system.
Blisters/rashes	Numerous individuals experiencing unexplained water-like blisters, weals (like bee stings), and/or rashes.
Illness in confined area	Different casualty rates for people working indoors versus outdoors dependent on where the agent was released.
Unusual liquid droplets	Numerous surfaces exhibit oily droplets/film; numerous water surfaces have an oily film. (No recent rain.)
Different-looking areas	Not just a patch of dead weeds, but trees, shrubs, bushes, food crops, and/or lawns that are dead, discolored, or withered. (No current drought.)
Low-lying clouds	Low-lying cloud/fog-like condition that is not consistent with its surroundings.
Unusual metal debris	Unexplained bomb/munitions-like material, especially if it contains a liquid.

INDICATORS OF A POSSIBLE BIOLOGICAL INCIDENT

Unusual numbers of sick or dying people or animals	Any number of symptoms may occur. Casualties may occur hours to days after an incident has occurred. The time required before symptoms are observed is dependent on the agent used.
Unscheduled and unusual spray being disseminated	Especially if outdoors during periods of darkness.
Abandoned spray devices	Devices may not have distinct odors.

INDICATORS OF A POSSIBLE RADIOLOGICAL INCIDENT

Radiation Symbols	Containers may display a “propeller” radiation symbol.
Unusual metal debris	Unexplained bomb/munitions-like material.

INDICATORS OF A POSSIBLE RADIOLOGICAL INCIDENT (continued)

Heat-emitting material	Material that is hot or seems to emit heat without any sign of an external heat source.
Glowing material	Strongly radioactive material may emit or cause radioluminescence.
Sick people/animals	In very improbable scenarios there may be unusual numbers of sick or dying people or animals. Casualties may occur hours to days or weeks after an incident has occurred. The time required before symptoms are observed is dependent on the radioactive material used, and the dose received. Possible symptoms include skin reddening or vomiting.

PERSONAL SAFETY CONSIDERATIONS

When approaching a scene that may involve CB agents or radioactive materials, the most critical consideration is the safety of oneself and other responders. Protective clothing and respiratory protection of appropriate level of safety must be used. In incidents where it is suspected that CBRN materials have been used as weapons, NIOSH-certified respirators with CBRN protection are highly recommended. Be aware that the presence and identification of CB agents or radioactive materials may not be verifiable, especially in the case of biological or radiological agents. The following actions/measures to be considered are applicable to either a chemical, biological or radiological incident. The guidance is general in nature, not all encompassing, and its applicability should be evaluated on a case-by-case basis.

Approach and response strategies. Protect yourself and use a safe approach (minimize any exposure time, maximize the distance between you and the item that is likely to harm you, use cover as protection and wear appropriate personal protective equipment and respiratory protection). Identify and estimate the hazard by using indicators as provided above. Isolate the area and secure the scene; potentially contaminated people should be isolated and decontaminated as soon as possible. To the extent possible, take measures to limit the spread of contamination. In the event of a chemical incident, the fading of chemical odors is not necessarily an indication of reduced vapor concentrations. Some chemicals deaden the senses giving the false perception that the chemical is no longer present.

If there is any indication that an area may be contaminated with radioactive materials, including the site of any non-accidental explosion, responder personnel should be equipped with radiation detection equipment that would alert them if they are entering a radiologically compromised environment, and should have received adequate training in its use. This equipment should be designed in such a way that it can also alert the responders when an unacceptable ambient dose rate or ambient dose has been reached.

Initial actions to consider in a potential CBRN/Hazmat Terrorism Event:

- Avoid using cell phones, radios, etc. within 100 meters (300 feet) of a suspect device
- NOTIFY your local police by calling 911.
- Set up Incident command upwind and uphill of the area.
- Do NOT touch or move suspicious packages/containers.
- Be cautious regarding potential presence of secondary devices (e.g. Improvised Explosive Devices (IEDs)).
- Avoid contamination.
- Limit access to only those responsible for rescue of victims or assessment of unknown materials or devices.
- Evacuate and isolate individuals potentially exposed to dangerous goods/hazardous materials.
- Isolate contaminated areas and secure the scene for analysis of material.

Decontamination measures. Emergency responders should follow standard decontamination procedures (flush-strip-flush). Mass casualty decontamination should begin as soon as possible by stripping (all clothing) and flushing (soap and water). **If biological agents are involved or suspected**, careful washing and use of a brush are more effective. **If chemical agents are suspected**, the most important and effective decontamination will be the one done within the first one or two minutes. If possible, further decontamination should be performed using a 0.5% hypochlorite solution (1 part household bleach mixed with 9 parts water). **If biological agents are suspected**, a contact time of 10 to 15 minutes should be allowed before rinsing. The solution can be used on soft tissue wounds, but must not be used in eyes or open wounds of the abdomen, chest, head, or spine. For further information contact the agencies listed in this guidebook.

For persons contaminated with radioactive material, remove them to a low radiation area if necessary. Remove their clothing and place it in a clearly marked and sealed receptacle, such as a plastic bag, for later testing. Use decontamination methods described above, but avoid breaking the skin, e.g., from shaving, or overly vigorous brushing. External radiological contamination on intact skin surface rarely causes a high enough dose to be a hazard to either the contaminated person or the first responders. For this reason, except in very unusual circumstances, an injured person who is also radiologically contaminated should be medically stabilized, taking care to minimize the spread of the contamination to the extent possible, before decontamination measures are initiated.

Note: The above information was developed in part by the Department of National Defence (Canada), the U.S. Department of the Army, Aberdeen Proving Ground and the Federal Bureau of Investigation (FBI).

Improvised Explosive Device (IED)
SAFE STAND-OFF DISTANCE

Threat Description		Explosives Capacity[1]		Mandatory Evacuation Distance[2]		Shelter-in-Place Zone		Preferred Evacuation Distance[3]	
High Explosives (TNT Equivalent)	Pipe Bomb	5 lbs	2.3 kg	70 ft	21 m	71 - 1,199 ft	22 - 365 m	+1,200 ft	366 m
	Suicide Bomber	20 lbs	9 kg	110 ft	34 m	111 - 1,699 ft	35 - 518 m	+1,700 ft	519 m
	Briefcase/Suitcase	50 lbs	23 kg	150 ft	46 m	151 - 1,849 ft	47 - 563 m	+1,850 ft	564 m
	Car	500 lbs	227 kg	320 ft	98 m	321 - 1,899 ft	99 - 579 m	+1,900 ft	580 m
	SUV/Van	1,000 lbs	454 kg	400 ft	122 m	401 - 2,399 ft	123 - 731 m	+2,400 ft	732 m
	Small Delivery Truck	4,000 lbs	1,814 kg	640 ft	195 m	641 - 3,799 ft	196 - 1,158 m	+3,800 ft	1,159 m
	Container/Water Truck	10,000 lbs	4,536 kg	860 ft	263 m	861 - 5,099 ft	264 - 1,554 m	+5,100 ft	1,555 m
	Semi-Trailer	60,000 lbs	27,216 kg	1,570 ft	475 m	1,571 - 9,299 ft	476 - 2,834 m	+9,300 ft	2,835 m

[1] Based on the maximum amount of material that could reasonably fit into a container or vehicle. Variations possible.

[2] Governed by the ability of an unreinforced building to withstand severe damage or collapse.

[3] Governed by the greater of fragment throw distance or glass breakage/falling glass hazard distance. These distances can be reduced for personnel wearing ballistic protection. Note that the pipe bomb, suicide bomb, and briefcase/suitcase bomb are assumed to have a fragmentation characteristic that requires greater stand-off distances than an equal amount of explosives in a vehicle.

Improvised Explosive Device (IED)
SAFE STAND-OFF DISTANCE

Threat Description		LPG Mass / Volume[1]		Fireball Diameter[2]		Safe Distance[3]	
LPG - Butane or Propane	Small LPG Tank	20 lbs / 5 gal	9 kg / 19 L	40 ft	12 m	160 ft	48 m
	Large LPG Tank	100 lbs / 25 gal	45 kg / 95 L	69 ft	21 m	276 ft	84 m
	Commercial/Residential LPG Tank	2,000 lbs / 500 gal	907 kg / 1,893 L	184 ft	56 m	736 ft	224 m
	Small LPG Truck	8,000 lbs / 2,000 gal	3,630 kg / 7,570 L	292 ft	89 m	1,168 ft	356 m
	Semitanker LPG	40,000 lbs / 10,000 gal	18,144 kg / 37,850 L	499 ft	152 m	1,996 ft	608 m

[1] Based on the maximum amount of material that could reasonably fit into a container or vehicle. Variations possible.

[2] Assuming efficient mixing of the flammable gas with ambient air.

[3] Determined by U.S. firefighting practices wherein safe distances are approximately 4 times the flame height. Note that an LPG tank filled with high explosives would require a significantly greater stand-off distance than if it were filled with LPG.

GLOSSARY

Adsorption In this guidebook, means a process by which a gas adheres to the surface of a solid but does not penetrate it, such as in adsorption of gases by activated carbon (charcoal).

AEGL(s) Acute Exposure Guideline Level(s), AEGLs represent threshold exposure limits for the general public after a once-in-a-lifetime, or rare, exposure and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. Three levels AEGL-1, AEGL-2 and AEGL-3 are developed for each of five exposure periods (10 and 30 minutes, 1 hour, 4 hours, and 8 hours) and are distinguished by varying degrees of severity of toxic effects; see AEGL-1, AEGL-2 and AEGL-3.

AEGL-1 AEGL-1 is the airborne concentration (expressed as parts per million or milligrams per cubic meter [ppm or mg/m^3]) of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic, non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

AEGL-2 AEGL-2 is the airborne concentration (expressed as ppm or mg/m^3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEGL-3 AEGL-3 is the airborne concentration (expressed as ppm or mg/m^3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

Alcohol-resistant foam A foam that is resistant to “polar” chemicals such as ketones and esters which may break down other types of foam.

Biological agents Living organisms that cause disease, sickness and mortality in humans. Anthrax and Ebola are examples of biological agents. **Refer to GUIDE 158.**

Blister agents (vesicants) Substances that cause blistering of the skin. Exposure is through liquid or vapor contact with any exposed tissue (eyes, skin, lungs). Mustard (H), Distilled Mustard (HD), Nitrogen Mustard (HN) and Lewisite (L) are blister agents.

Symptoms: Red eyes, skin irritation, burning of skin, blisters, upper respiratory damage, cough, hoarseness.

GLOSSARY

Blood agents — Substances that injure a person by interfering with cell respiration (the exchange of oxygen and carbon dioxide between blood and tissues). Hydrogen cyanide (AC) and Cyanogen chloride (CK) are blood agents.

Symptoms: Respiratory distress, headache, unresponsiveness, seizures, coma.

Burn — Refers to either a chemical or thermal burn, the former may be caused by corrosive substances and the latter by liquefied cryogenic gases, hot molten substances, or flames.

Carcinogen — A substance or mixture which induces cancer or increases its incidence.

Category A — An infectious substance that poses a high risk to the health of individuals and/or animals or public health. These substances can cause serious disease and can lead to death. Effective treatment and preventative measures may not be available.

Category B — An infectious substance that poses a low to moderate risk to individuals and/or animals and/or public health. These substances are unlikely to cause serious disease. Effective treatment and preventative measures are available.

CBRN — Chemical, biological, radiological or nuclear warfare agent.

Choking agents — Substances that cause physical injury to the lungs. Exposure is through inhalation. In extreme cases, membranes swell and lungs become filled with liquid (pulmonary edema). Death results from lack of oxygen; hence, the victim is “choked”. Phosgene (CG) is a choking agent.

Symptoms: Irritation to eyes/nose/throat, respiratory distress, nausea and vomiting, burning of exposed skin.

CO_2 — Carbon dioxide gas.

Cold zone — Area where the command post and support functions that are necessary to control the incident are located. This is also referred to as the clean zone, green zone or support zone in other documents. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472).

Combustible liquid — Liquids which have a flash point greater than 60°C (140°F) and below 93°C (200°F). U.S. regulations permit a flammable liquid with a flash point between 38°C (100°F) and 60°C (140°F) to be reclassed as a combustible liquid.

GLOSSARY

Compatibility Group

Letters identify explosives that are deemed to be compatible. The definition of these Compatibility Groups in this Glossary are intended to be descriptive. Please consult the transportation of dangerous goods/hazardous materials or explosives regulations of your jurisdiction for the exact wording of the definitions. Class 1 materials are considered to be “compatible” if they can be transported together without significantly increasing either the probability of an incident or, for a given quantity, the magnitude of the effects of such an incident.

A Substances which are expected to mass detonate very soon after fire reaches them.

B Articles which are expected to mass detonate very soon after fire reaches them.

C Substances or articles which may be readily ignited and burn violently without necessarily exploding.

D Substances or articles which may mass detonate (with blast and/or fragment hazard) when exposed to fire.

E&F Articles which may mass detonate in a fire.

G Substances and articles which may mass explode and give off smoke or toxic gases.

H Articles which in a fire may eject hazardous projectiles and dense white smoke.

J Articles which may mass explode.

K Articles which in a fire may eject hazardous projectiles and toxic gases.

L Substances and articles which present a special risk and could be activated by exposure to air or water.

N Articles which contain only extremely insensitive detonating substances and demonstrate a negligible probability of accidental ignition or propagation.

S Packaged substances or articles which, if accidentally initiated, produce effects that are usually confined to the immediate vicinity.

GLOSSARY

Control zones Designated areas at dangerous goods incidents, based on safety and the degree of hazard. Many terms are used to describe control zones; however, in this guidebook, these zones are defined as the hot/exclusion/red/restricted zone, warm/contamination reduction/yellow/limited access zone, and cold/support/green/clean zone. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472).

Cryogenic liquid A refrigerated, liquefied gas that has a boiling point colder than -90°C (-130°F) at atmospheric pressure.

Decomposition products Products of a chemical or thermal break-down of a substance.

Decontamination The removal of dangerous goods from personnel and equipment to the extent necessary to prevent potential adverse health effects. Always avoid direct or indirect contact with dangerous goods; however, if contact occurs, personnel should be decontaminated as soon as possible. Since the methods used to decontaminate personnel and equipment differ from one chemical to another, contact the chemical manufacturer, through the agencies listed on the inside back cover, to determine the appropriate procedure. Contaminated clothing and equipment should be removed after use and stored in a controlled area (warm/contamination reduction/yellow/limited access zone) until cleanup procedures can be initiated. In some cases, protective clothing and equipment cannot be decontaminated and must be disposed of in a proper manner.

Dry chemical A preparation designed for fighting fires involving flammable liquids, pyrophoric substances and electrical equipment. Common types contain sodium bicarbonate or potassium bicarbonate.

Edema The accumulation of an excessive amount of watery fluid in cells and tissues. Pulmonary edema is an excessive buildup of water in the lungs, for instance, after inhalation of a gas that is corrosive to lung tissue.

ERPG(s) Emergency Response Planning Guideline(s). Values intended to provide estimates of concentration ranges above which one could reasonably anticipate observing adverse health effects; see ERPG-1, ERPG-2 and ERPG-3.

GLOSSARY

ERPG-1	The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing more than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor.	
ERPG-2	The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.	
ERPG-3	The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects.	
Flammable liquid	A liquid that has a flash point of 60°C (140°F) or lower.	
Flash point	Lowest temperature at which a liquid or solid gives off vapor in such a concentration that, when the vapor combines with air near the surface of the liquid or solid, a flammable mixture is formed. Hence, the lower the flash point, the more flammable the material.	
Hazard zones (Inhalation Hazard Zones)	**HAZARD ZONE A:**	Gases: LC50 of less than or equal to 200 ppm, Liquids: V equal to or greater than 500 LC50 and LC50 less than or equal to 200 ppm,
	HAZARD ZONE B:	Gases: LC50 greater than 200 ppm and less than or equal to 1000 ppm, Liquids: V equal to or greater than 10 LC50; LC50 less than or equal to 1000 ppm and criteria for Hazard Zone A are not met.
	HAZARD ZONE C:	LC50 greater than 1000 ppm and less than or equal to 3000 ppm,
	HAZARD ZONE D:	LC50 greater than 3000 ppm and less than or equal to 5000 ppm.

GLOSSARY

Hot zone	Area immediately surrounding a dangerous goods incident which extends far enough to prevent adverse effects from released dangerous goods to personnel outside the zone. This zone is also referred to as exclusion zone, red zone or restricted zone in other documents. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472).
IED	See "Improvised Explosive Device".
Immiscible	In this guidebook, means that a material does not mix readily with water.
Improvised Explosive Device	A bomb that is manufactured from commercial, military or homemade explosives.
Large spill	A spill that involves quantities that are greater than 208 liters (55 US gallons) for liquids and greater than 300 kilograms (660 pounds) for solids.
LC50	Lethal concentration 50. The concentration of a material administered by inhalation that is expected to cause the death of 50% of an experimental animal population within a specified time. (Concentration is reported in either ppm or mg/m^3).
Mass explosion	Explosion which affects almost the entire load virtually instantaneously.
MAWP	Maximum Allowable Working Pressure: The maximum allowable internal pressure that the tank may experience during normal operations
mg/m^3	Milligrams of a material per cubic meter of air.
Miscible	In this guidebook, means that a material mixes readily with water.
mL/m^3	Milliliters of a material per cubic meter of air. (1 mL/m^3 equals 1 ppm).
Mutagen	An agent giving rise to an increased occurrence of mutations in populations of cells and/or organisms. Mutation means a permanent change in the amount or structure of the genetic material in a cell.

GLOSSARY

Narcotic — A substance which acts as a central nervous system depressor producing effects such as drowsiness, narcosis, reduced alertness, loss of reflexes, lack of coordination, and vertigo. These effects can also be manifested as severe headache or nausea, and can lead to reduced judgment, dizziness, irritability, fatigue, impaired memory function, deficit in perception and coordination, reaction time, or sleepiness.

Nerve agents — Substances that interfere with the central nervous system. Exposure is primarily through contact with the liquid (via skin and eyes) and secondarily through inhalation of the vapor. Tabun (GA), Sarin (GB), Soman (GD) and VX are nerve agents.

Symptoms: Pinpoint pupils, extreme headache, severe tightness in the chest, dyspnea, runny nose, coughing, salivation, unresponsiveness, seizures.

n.o.s. — These letters refer to "not otherwise specified". The entries which use this description are generic names such as "Corrosive liquid, n.o.s." This means that the actual chemical name for that corrosive liquid is not listed in the regulations; therefore, a generic name must be used to describe it on shipping papers.

Noxious — In this guidebook, means that a material may be harmful or injurious to health or physical well-being.

Oxidizer — A chemical which supplies its own oxygen and which helps other combustible material burn more readily.

P — See "Polymerization".

Packing Group — The Packing Group (PG) is assigned based on the degree of danger presented by the hazardous material:

PG I : Great danger
PG II : Medium danger
PG III : Minor danger

PG — See "Packing Group".

pH — pH is a value that represents the acidity or alkalinity of a water solution. Pure water has a pH of 7. A pH value below 7 indicates an acid solution (a pH of 1 is extremely acidic). A pH above 7 indicates an alkaline solution (a pH of 14 is extremely alkaline). Acids and alkalies (bases) are commonly referred to as corrosive materials.

GLOSSARY

PIH — Poison Inhalation Hazard. Term used to describe gases and volatile liquids that are toxic when inhaled. (Same as TIH).

Polar — See “Miscible”.

Polymerization — A chemical reaction that often produces heat and pressure. Once initiated, the reaction is accelerated by the heat that it produces. The uncontrolled buildup of heat and pressure can cause a fire or an explosion, or can rupture closed containers. The letter (**P**) following a guide number in the yellow-bordered and blue-bordered pages identifies a material that may polymerize violently under high temperature conditions or contamination with other products. It is also used to identify materials that have a strong potential for polymerization in the absence of an inhibitor due to depletion of this inhibitor caused by accident conditions.

ppm — Parts per million. (1 ppm equals 1 mL/m^3).

Protective clothing — Includes both respiratory and physical protection. One cannot assign a level of protection to clothing or respiratory devices separately. These levels were accepted and defined by response organizations such as U.S. Coast Guard, NIOSH, and U.S. EPA.

- Level A: SCBA plus totally encapsulating chemical resistant clothing (permeation resistant).
- Level B: SCBA plus hooded chemical resistant clothing (splash suit).
- Level C: Full or half-face respirator plus hooded chemical resistant clothing (splash suit).
- Level D: Coverall with no respiratory protection.

Pyrophoric — A material which ignites spontaneously upon exposure to air (or oxygen).

Radiation Authority — As referred to in GUIDES 161 through 166 for radioactive materials, the Radiation Authority is either a Federal, state/provincial agency or state/province designated official. The responsibilities of this authority include evaluating radiological hazard conditions during normal operations and during emergencies. If the identity and telephone number of the authority are not known by emergency responders, or included in the local response plan, the information can be obtained from the agencies listed on the inside back cover. They maintain a periodically updated list of radiation authorities.

GLOSSARY

Radioactivity — The property of some substances to emit invisible and potentially harmful radiation.

Refrigerated liquid — See “Cryogenic liquid”.

Respiratory sensitizer — A substance that induces hypersensitivity of the airways following inhalation of the substance.

Right-of-way — A defined area on a property containing one or more high-pressure natural gas pipelines.

Shelter in-place — People should seek shelter inside a building and remain inside until the danger passes. **Sheltering in-place is used when evacuating the public would cause greater risk than staying where they are, or when an evacuation cannot be performed**. Direct the people inside to **close all doors and windows** and to **shut off all ventilating, heating and cooling systems**. In-place protection (shelter in-place) may not be the best option if (a) the vapors are flammable; (b) if it will take a long time for the gas to clear the area; or (c) if buildings cannot be closed tightly. Vehicles can offer some protection for a short period if the windows are closed and the ventilating systems are shut off. Vehicles are not as effective as buildings for in-place protection.

Skin corrosion — The production of irreversible damage to the skin following the application of a test substance for up to 4 hours.

Skin irritation — The production of reversible damage to the skin following the application of a test substance for up to 4 hours.

Skin sensitizer — A substance that will induce an allergic response following skin contact.

Small spill — A spill that involves quantities that are less than 208 liters (55 US gallons) for liquids and less than 300 kilograms (660 pounds) for solids.

Specific gravity — Weight of a substance compared to the weight of an equal volume of water at a given temperature. Specific gravity less than 1 indicates a substance is lighter than water; specific gravity greater than 1 indicates a substance is heavier than water.

GLOSSARY

Straight (solid) stream Method used to apply or distribute water from the end of a hose. The water is delivered under pressure for penetration. In an efficient straight (solid) stream, approximately 90% of the water passes through an imaginary circle 38 cm (15 inches) in diameter at the breaking point. Hose (solid or straight) streams are frequently used to cool tanks and other equipment exposed to flammable liquid fires, or for washing burning spills away from danger points. However, straight streams will cause a spill fire to spread if improperly used or when directed into open containers of flammable and combustible liquids.

TIH Toxic Inhalation Hazard. Term used to describe gases and volatile liquids that are toxic when inhaled. (Same as PIH).

V Saturated vapor concentration in air of a material in mL/m^3 (volatility) at 20°C and standard atmospheric pressure.

Vapor density Weight of a volume of pure vapor or gas (with no air present) compared to the weight of an equal volume of dry air at the same temperature and pressure. A vapor density less than 1 (one) indicates that the vapor is lighter than air and will tend to rise. A vapor density greater than 1 (one) indicates that the vapor is heavier than air and may travel along the ground.

Vapor pressure Pressure at which a liquid and its vapor are in equilibrium at a given temperature. Liquids with high vapor pressures evaporate rapidly.

Viscosity Measure of a liquid's internal resistance to flow. This property is important because it indicates how fast a material will leak out through holes in containers or tanks.

Warm zone Area between Hot and Cold zones where personnel and equipment decontamination and hot zone support take place. It includes control points for the access corridor and thus assists in reducing the spread of contamination. Also referred to as the contamination reduction corridor (CRC), contamination reduction zone (CRZ), yellow zone or limited access zone in other documents. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472).

Water Reactive Material For the purpose of this guidebook, produces significant toxic gas when it comes in contact with water.

Water-sensitive Substances which may produce flammable and/or toxic decomposition products upon contact with water.

Water spray (fog)

Method or way to apply or distribute water. The water is finely divided to provide for high heat absorption. Water spray patterns can range from about 10 to 90 degrees. Water spray streams can be used to extinguish or control the burning of a fire or to provide exposure protection for personnel, equipment, buildings, etc. **(This method can be used to absorb vapors, knock-down vapors or disperse vapors. Direct a water spray (fog), rather than a straight (solid) stream, into the vapor cloud to accomplish any of the above).**

Water spray is particularly effective on fires of flammable liquids and volatile solids having flash points above 37.8°C (100°F).

Regardless of the above, water spray can be used successfully on flammable liquids with low flash points. The effectiveness depends particularly on the method of application. With proper nozzles, even gasoline spill fires of some types have been extinguished when coordinated hose lines were used to sweep the flames off the surface of the liquid. Furthermore, water spray carefully applied has frequently been used with success in extinguishing fires involving flammable liquids with high flash points (or any viscous liquids) by causing frothing to occur only on the surface, and this foaming action blankets and extinguishes the fire.

PUBLICATION DATA

The 2016 Emergency Response Guidebook (ERG2016) was prepared by the staff of Transport Canada, the U.S. Department of Transportation, and the Secretariat of Communications and Transport of Mexico with the assistance of many interested parties from government and industry including the collaboration of CIQUIME of Argentina. The original authors of the ERG are Transport Canada's Michel Cloutier and U.S. DOT's George Cushmac. Printing and publication services are provided through U.S. DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA), Outreach, Training, and Grants Division.

ERG2016 is based on earlier Transport Canada, U.S. DOT, and Secretariat of Communications and Transport emergency response guidebooks. ERG2016 is published in three languages: English, French and Spanish. The Emergency Response Guidebook has been translated and printed in other languages, including Chinese, German, Hebrew, Japanese, Portuguese, Korean, Hungarian, Polish, Turkish and Thai.

We encourage countries that wish to translate this Guidebook to please contact any of the websites or telephone numbers in the next paragraph.

DISTRIBUTION OF THIS GUIDEBOOK

The primary objective is to place one copy of the ERG2016 in each publicly owned emergency service vehicle through distribution to Federal, state, provincial and local public safety authorities. The distribution of this guidebook is being accomplished through the voluntary cooperation of a network of key agencies. Emergency service organizations that have not yet received copies of ERG2016 should contact the respective distribution center in their country, state or province. In the U.S., information about the distribution center for your location may be obtained from the Office of Hazardous Materials Safety website at http://phmsa.dot.gov/hazmat/outreach-training/erg or call 202-366-4900. In Canada, contact CANUTEC at 613-992-4624 or via the website at http://www.tc.gc.ca/canutec for information. In Mexico, call SCT at 50-11-92-20, 50-11-92-40 or 50-11-92-70 or via email at iflores@sct.gob.mx. In Argentina, call CIQUIME at 011-4611-2007, or via the website at http://www.ciquime.org.ar, or via email at gre2016@ciquime.org.ar.

REPRODUCTION AND RESALE

Copies of this document which are provided free-of-charge to fire, police and other emergency services may not be resold. ERG2016 (PHH50-ERG2016) may be reproduced without further permission subject to the following:

The names and the seals of the participating governments may not be reproduced on a copy of this document unless that copy accurately reproduces the entire content (text, format, and coloration) of this document without modification. In addition, the publisher's full name and address must be displayed on the outside back cover of each copy, replacing the wording placed on the center of the back cover.

Constructive comments concerning ERG2016 are solicited; in particular, comments concerning its use in handling incidents involving dangerous goods. Comments should be addressed to:

In Canada:

Director, CANUTEC
Transport Dangerous Goods
Transport Canada
Ottawa, Ontario
Canada K1A 0N5

Phone: 613-992-4624 (information)
Fax: 613-954-5101
Email: canutec@tc.gc.ca

In the U.S.:

U. S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration
Outreach, Training, and Grants Division (PHH-50)
Washington, DC 20590-0001

Phone: 202-366-4900
Fax: 202-366-7342
Email: ERGComments@dot.gov

In Mexico:

Secretariat of Communications and Transportation
Federal Motor Carrier General Direction
Deputy General Director for Standards, Technical
Specifications and Motor Carrier Safety
Calz. de las Bombas No. 411 2nd floor
Col. Los Girasoles
Del. Coyoacan
C.P.04920
Mexico D.F.
Phone: (+52) (55) 50-11-92-20, (55) 50-11-92-40 and (55) 50-11-92-70

In Argentina:

Centro de Información Química para Emergencias (CIQUIME)
Juan Bautista Alberdi 2986
C1406GSS Buenos Aires, Argentina
Phone: +54-11-4611-2007 Fax +54-11-4613-3707
Email: gre2016@ciquime.org.ar

The Emergency Response Guidebook is normally revised and reissued every four years. However, in the event of a significant mistake, omission or change in the state of knowledge, special instructions to change the guidebook (in pen-and-ink, with paste-over stickers, or with a supplement) may be issued.

Users of this guidebook should check periodically (about every 6 months) to make sure their version is current. Changes should be annotated below. Contact:

DOT/PHMSA
http://phmsa.dot.gov/hazmat/outreach-training/erg

TRANSPORT CANADA
https://www.tc.gc.ca/eng/canutec/menu.htm

CIQUIME
http://www.ciquime.org.ar

This guidebook incorporates changes dated:

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CANADA AND UNITED STATES NATIONAL RESPONSE CENTERS

CANADA

1. CANUTEC

CANUTEC is the **Canadian Transport Emergency Centre** operated by the Transportation of Dangerous Goods Directorate of Transport Canada.
CANUTEC provides a national bilingual (French and English) advisory service and is staffed by professional scientists experienced and trained in interpreting technical information and providing emergency response advice.

In an emergency, CANUTEC may be called at 1-888-CANUTEC (226-8832)
or collect at 613-996-6666 (24 hours)
***666 cellular (Press Star 666, Canada only)**

In a non-emergency situation, please call the information line at 613-992-4624 (24 hours).

2. PROVINCIAL/TERRITORIAL AGENCIES

Although technical information and emergency response assistance can be obtained from **CANUTEC**, there are federal, provincial and territorial regulations requiring the reporting of dangerous goods incidents to certain authorities.

The following list of provincial/territorial agencies is supplied for your convenience.

Province	Emergency Authority and/or Telephone Number
Alberta	Local Police and Provincial Authorities 1-800-272-9600 or 780-422-9600
British Columbia	Local Police and Provincial Authorities 1-800-663-3456
Manitoba	Provincial Authority 204-945-4888 and Local Police or fire brigade, as appropriate
New Brunswick	Local Police or 1-800-565-1633
Newfoundland and Labrador	Local Police and 709-772-2083
Northwest Territories	867-920-8130
Nova Scotia	Local Police or 1-800-565-1633
Nunavut	Local Police and 867-920-8130
Ontario	Local Police
Prince Edward Island	Local Police or 1-800-565-1633
Quebec	Local Police
Saskatchewan	Local Police or 1-800-667-7525
Yukon Territory	867-667-7244

NOTE:

1. The appropriate federal agency must be notified in the case of rail, air or marine incidents.
2. The nearest police department must be notified in the case of lost, stolen or misplaced explosives, radioactive materials or infectious substances.
3. **CANUTEC must** be notified in the case of:
   a. lost, stolen or unlawfully interfered with dangerous goods (except Class 9);
   b. an incident involving infectious substances;
   c. an accidental release from a cylinder that has suffered a catastrophic failure;
   d. an incident where the shipping documents display CANUTEC's telephone number, 1-888-CANUTEC (226-8832) or 613-996-6666, as the emergency telephone number; or
   e. a dangerous goods incident in which a railway vehicle, a ship, an aircraft, an aerodrome or an air cargo facility is involved.

3. Emergency Response Assistance Plans (Applies in Canada ONLY)

An ERAP or Emergency Response Assistance Plan is an approved plan that describes what is to be done in the event of a transportation accident involving certain higher risk dangerous goods. The ERAP is required by the Canadian *Transportation of Dangerous Goods Act* for dangerous goods that require special expertise and response equipment to respond to an incident. The plan is intended to assist local emergency responders by providing them with technical experts and specially trained and equipped emergency response personnel at the scene of a dangerous goods incident.

The ERAP will describe the specialized response capabilities, equipment and procedures that will be used to support a response to incidents involving high risk dangerous goods. The plan will also address emergency preparedness, including personnel training, response exercises and equipment maintenance. The ERAP plans supplement those of the carrier and of the local and provincial authorities, and must be integrated with other organizations to help mitigate the consequences of an accident.

For shipments that require an ERAP, the ERAP number and the phone number to activate the ERAP will be included on the shipping document. If additional information is required, or to determine if the product involved in the emergency requires an ERAP, contact **CANUTEC**.

CANUTEC may be called at 1-888-CANUTEC (226-8832)
or collect at 613-996-6666 (24 hours)
666 on cellular phone (Press star 666) *In Canada Only

UNITED STATES

NATIONAL RESPONSE CENTER (NRC)

The NRC, which is operated by the U.S. Coast Guard, receives reports required when dangerous goods and hazardous substances are spilled. After receiving notification of an incident, the NRC will immediately notify the appropriate Federal On-Scene Coordinator and concerned Federal agencies. Federal law requires that anyone who releases into the environment a reportable quantity of a hazardous substance (including oil when water is, or may be affected) or a material identified as a marine pollutant, must **immediately** notify the NRC. When in doubt as to whether the amount released equals the required reporting levels for these materials, the NRC should be notified.

CALL **NRC** (24 hours)

1-800-424-8802

(Toll-free in the U.S., Canada, and the U.S. Virgin Islands)

202-267-2675 in the District of Columbia

Calling the emergency response telephone number, CHEMTREC®, CHEMTEL, INC., INFOTRAC or 3E COMPANY, does not constitute compliance with regulatory requirements to call the NRC.

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EMERGENCY RESPONSE TELEPHONE NUMBERS

MEXICO

1. CENACOM

01-800-00-413-00 toll free in the Mexican Republic
For calls originating in Mexico City and the Metropolitan Area: **5128-0000**
For calls originating elsewhere, call: **01-55-5128-0000**
exts. 36469, 36470, 36471, 36472, 37807, 37808, 37809, 37810, 37811, 37812

2. CONASENUSA

01-800-11-131-68 toll free in the Mexican Republic
24 hours, 365 days

3. SETIQ

01-800-00-214-00 in the Mexican Republic
For calls originating in Mexico City and the Metropolitan Area: **5559-1588**
For calls originating elsewhere, call: **+52-55-5559-1588**

ARGENTINA

1. CIQUIME

0-800-222-2933 in the Republic of Argentina
For calls originating elsewhere, call: **+54-11-4611-2007**
(Collect calls are accepted)

BRAZIL

1. PRÓ-QUÍMICA

0-800-118270
(Toll-free in Brazil)
For calls originating elsewhere, call: **+55-19-3833-5310**
(Collect calls are accepted)

COLOMBIA

1. CISPROQUIM

01-800-091-6012 in Colombia
For calls originating in Bogotá, Colombia call: **288-6012**
For calls originating elsewhere, call
+57-1-288-6012

CHILE

1. CITUC QUÍMICO

2-2247-3600 in the Republic of Chile
For calls originating elsewhere, call
+56-2-2247-3600

EMERGENCY RESPONSE TELEPHONE NUMBERS

CANADA

1. CANUTEC, provides a 24 hour national bilingual (French and English) emergency response advisory service:

1-888-CANUTEC (226-8832) or 613-996-6666*

***666 (STAR 666) cellular** (in Canada only)

UNITED STATES

1. CHEMTREC®, a 24 hour emergency response communication service:

1-800-424-9300 *

(Toll-free in the U.S., Canada and the U.S. Virgin Islands)

703-527-3887 For calls originating elsewhere

2. CHEMTEL, INC., a 24 hour emergency response communication service:

1-888-255-3924 *

(Toll-free in the U.S., Canada, Puerto Rico and the U.S. Virgin Islands)

813-248-0585 For calls originating elsewhere

3. INFOTRAC, a 24 hour emergency response communication service:

1-800-535-5053 *

(Toll-free in the U.S., Canada and the U.S. Virgin Islands)

352-323-3500 For calls originating elsewhere

4. 3E COMPANY, a 24 hour emergency response communication service:

1-800-451-8346 *

(Toll-free in the U.S., Canada and the U.S. Virgin Islands)

760-602-8703 For calls originating elsewhere

The emergency response information services shown above have requested to be listed as providers of emergency response information and have agreed to provide emergency response information to all callers. They maintain periodically updated lists of state and Federal radiation authorities who provide information and technical assistance on handling incidents involving radioactive materials.

5. MILITARY SHIPMENTS, for assistance at incidents involving materials being shipped by, for, or to the Department of Defense (DOD), call one of the following numbers (24 hours):

703-697-0218 * - Explosives/ammunition incidents

(U.S. Army Operations Center)

1-800-851-8061 (Toll-free in the U.S.) - All other dangerous goods incidents

(Defense Logistics Agency)

6. NATIONWIDE POISON CONTROL CENTER (United States only)

1-800-222-1222 (Toll-free in the U.S.)

* Collect calls are accepted

A guidebook intended for use by first responders during the initial phase of a **transportation incident involving dangerous goods/hazardous materials**

THIS DOCUMENT SHOULD NOT BE USED TO DETERMINE COMPLIANCE WITH THE DANGEROUS GOODS/HAZARDOUS MATERIALS REGULATIONS
OR
TO CREATE WORKER SAFETY DOCUMENTS FOR SPECIFIC CHEMICALS

NOT FOR SALE

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U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration
http://phmsa.dot.gov/hazmat

Transport Canada Transports Canada
http://www.tc.gc.ca/TDG

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http://www.sct.gob.mx